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December 3, 2010

Ms. Patricia Coppolino
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Waste Management Division
Sites Management Section
103 South Main Street
Waterbury, Vermont 05671

Re: Limited Phase II Environmental Site Assessment Report: Stage I
Former Jard Company Site, Bennington, Vermont
JCO #3-2218-3

Dear Trish:

The Johnson Company is pleased to present the following Limited Phase II Environmental Site Assessment Report to the Vermont Department of Environmental Conservation (VT DEC). This report discusses the findings of the Stage I investigation conducted at Former Jard Company Site in Bennington, Vermont, as proposed in a work plan dated June 3, 2010. The Stage I investigation included an assessment of polychlorinated biphenyl (PCB) migration in groundwater from the Former Jard Company Site and an assessment of the presence of PCB-and bis(2-ethylhexyl)phthalate-containing non-aqueous phase liquid at the Site.

If you would like to discuss the findings of this report, please do not hesitate to contact me at 229-4600. Thank you for the opportunity to be of assistance on this project.

Sincerely,

THE JOHNSON COMPANY, INC.

By: 

Daniel P. Baston
Project Manager

Attachment

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Limited Phase II Environmental Site Assessment

Former Jard Company Site Bowen Road Bennington, Vermont

December 2010

Prepared for:

Vermont Department of Environmental Conservation

103 South Main Street

Waterbury, Vermont 05671



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EXECUTIVE SUMMARY

The Johnson Company was contracted by the Vermont Department of Environmental Conservation (VT DEC) to perform limited Phase II Environmental Site Assessment (ESA) activities at the Former Jard Company Site located on Bowen Road in Bennington, Vermont (the Site). The site was owned by the Jard Company, a maker of capacitors, non-fluid transformers, and household appliance motors, until it declared bankruptcy in 1989. There is no current owner of the Site.

Numerous investigations have been conducted at the Site, beginning in 1989 (Wehren, 1989). These investigations have focused primarily on polychlorinated biphenyls (PCBs) and bis(2-ethylhexyl)phthalate (also called di(2-ethylhexyl)phthalate, or DEHP) in shallow soils, groundwater, and building materials at the Site. As a result of these investigations, soils have been removed from multiple locations on the Site, the former Jard Company facility has been demolished, and a cap has been placed over the former footprint; these activities were led by the U.S. Environmental Protection Agency (EPA) and VT DEC to prevent imminent threats to human health and the environment. No groundwater remediation has occurred.

While previous investigations focused on the human health risk potential for direct contact with PCBs, this investigation focused on the horizontal extent of off-site migration of PCBs in groundwater, including potential discharges to local surface water bodies, and the potential for PCBs to exist as subsurface dense non-aqueous phase liquid (DNAPL) beneath the Site.

To accomplish these objectives, The Johnson Company installed twelve soil borings (eleven of which were completed as monitoring wells) and nine piezometers over an approximately 20-acre area. Soil sampling and hydrophobic dye testing were performed during installation of the soil borings to assess potential DNAPL presence. Groundwater samples were collected from twenty-two monitoring wells, five piezometers, two residential supply wells, and a basement drain pipe. Water levels were measured at 34 locations.

Results of the investigation show the presence of a PCB plume in groundwater, appearing to originate in the vicinity of MW-3, near the southern edge of the former building location. PCBs were detected at 14,000 µg/L in MW-3 and at 1.8 µg/L in the most downgradient well sampled, a private well at a Park Street residence approximately 1,200 feet downgradient of MW-3.

The presence of PCB DNAPL beneath the Site is indicated by the results of hydrophobic dye testing, soil sampling, the presence of accumulated free product in the sump of MW-3, PCB concentrations in groundwater relative to solubility limits, and the depth of PCB detections in groundwater. In addition, NAPL entrained in a groundwater sample collected from MW-3 was found to be lighter than water, indicating the presence of lighter-than water NAPL (LNAPL) at the Site. The top of a silty clay layer was observed at approximately 29.5 to 32.5 feet below ground surface in borings installed on and off-site. This layer may have limited the downward migration of DNAPL at the Site.

Based on the findings of this investigation, and discussions with VT DEC regarding their concerns, The Johnson Company has provided recommendations at the end of this report for VT DEC consideration which further investigate the potential for human exposure to PCBs in groundwater and surface soils, and provide additional definition of the nature and extent of PCB contamination in the DNAPL source area and downgradient in groundwater and surface water.

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1. INTRODUCTION

1.1. BACKGROUND

The Johnson Company was contracted by the Vermont Department of Environmental Conservation (VT DEC) to perform limited Phase II Environmental Site Assessment (ESA) activities at the Former Jard Company Site located on Bowen Road in Bennington, Vermont (the Site; see Figure 1). The presence of high concentrations of polychlorinated biphenyls (PCBs) and bis(2-ethylhexyl) phthalate (also called di(2-ethylhexyl) phthalate, or DEHP) in soils and groundwater at the Site has been documented in previous investigations. In general, previous investigations and associated remedial actions have addressed PCB contamination in building materials, shallow soils, and shallow groundwater at the Site in an effort to mitigate imminent risks to human health and the environment; however, limited work had been done to assess off-site migration of PCBs in groundwater and potential discharges to surface water. Pure PCBs have been characterized as dense non-aqueous phase liquid (DNAPL), which can migrate to depths significantly below the water table, and possibly spread laterally on fine-grained soil layers or exist as disconnected stringers. DNAPLs can be a long-term source of dissolved phase contamination in groundwater (Kueper, 2003). Although previous investigations contained limited observations of NAPL (e.g. Lockheed Martin, 2000), the lack of deeper soil borings or monitoring wells at the Site has limited the scope of any conclusions about the presence or distribution of DNAPL.

During an on-site groundwater sampling event in December 2009 performed by ECS, two samples were collected from surface water bodies apparently downgradient of the Site for laboratory analysis of twelve coplanar or “dioxin-like” PCB congeners (EPA Method 1668A). One sample was collected from the Roaring Branch of the Walloomsac River, downstream of the Park Street Bridge and approximately 750 feet west-northwest of the Site. A second sample was collected from a small (approximately 0.2-acre), shallow pond located on the eastern side of Park Street (the “Duck Pond,” see Figure 2), approximately 850 feet northwest of the Site. Four of the twelve targeted PCB congeners were detected in one or both of the samples at levels below 1 nanogram per liter (ng/L). The detection of PCBs in these samples indicated to the VT DEC that

the potential may exist for dissolved phase PCBs in groundwater to impact neighboring surface water, including the Duck Pond, an unnamed tributary to Furnace Brook on the north side of Bowen Road, and a wetland to the west of residential properties along Park Street. However, additional characterization of groundwater flow directions and PCB concentrations in groundwater was required to determine which surface water body or other receptors, if any, were at risk.

1.2. SITE DESCRIPTION

The Site consists of the western portion of an approximately 33-acre parcel located on the southern side of Bowen Road approximately 1,300 feet southeast of the intersection of Bowen Road and Park Street in Bennington, Vermont. For the purpose of this report, the western portion of this parcel is considered independently from additional land to the east also formerly owned by the Jard Company, as shown on Figure 2.

Properties surrounding the Site reflect a mixture of residential, industrial, and public land uses. The Site is bordered to the south by a levee constructed alongside the Roaring Branch of the Walloomsac River, which flows to the west and northwest; to the north by the former US Tsubaki plant now leased by Plasan North America; to the west by the Bennington Little League fields; and to the east by vacant land owned by the Town of Bennington (formerly owned by the Jard Company). The levee along the Roaring Branch was previously located approximately 90 feet north of the northern edge of the river, but was moved approximately 40 feet north in the summer of 2010 as part of a floodplain restoration project to allow the river to access more of the historical floodplain and reduce future flood damage (Bennington Select Board, 2010). Approximate former and current positions of the levee in the vicinity of the Site are shown on Figure 2.

The Site was initially developed in 1969 by the Jard Company, which used the property for the manufacturing of small capacitors, small non-fluid transformers, and small motors (Wehran, 1989). Manufacturing was conducted in an approximately 120,000-square foot building (the approximate former outline of this building is shown on Figure 2). In 1989, Jard

declared bankruptcy, and the Site has no current owner. Surface soils have been removed from portions of the Site during several United States Environmental Protection Agency (EPA)-led removal actions between 1992 and 2007. The building was demolished in 2006 under the supervision of the EPA (EPA, 2006), and an earthen cap was installed over the former building site in 2007 (EPA, 2007).

Capacitors manufactured at the facility were coated with zinc and, until 1978, filled with oils containing polychlorinated biphenyls (PCBs). Initially, Aroclor 1242 was used in the manufacturing process, but this was reportedly replaced by Aroclor 1016 in 1971 (VT AEC, 1976). Significant quantities of PCBs were used at the Site: Jard reportedly received an average of 550,000 pounds of PCBs annually from 1971 to 1974 (VT DEC, 1991). In 1978, the use of PCBs was ceased and replaced with DEHP, historically referred to as dioctyl phthalate, or DOP (VT DEC, 1991). In addition to PCBs and DEHP, the plant made use of oils, degreasers, solvents, and paints during manufacturing processes. These substances, which included petroleum constituents, chlorinated compounds (trichloroethene and 1,1,1-trichloroethane), and zinc, in addition to PCBs and DEHP, may have been released to soil and groundwater through a number of subsurface structures, including dry wells, underground storage tanks, subsurface vaults, floor drains, and a leachfield. Multiple subsurface structures were identified during previous investigations. However, because investigations at the Site began after the facility had been abandoned by the Jard Company, the purpose and historical use of these structures is not clear. However, the potential exists for PCBs to have been released to the subsurface at multiple locations within the Site.

1.3. INVESTIGATION OBJECTIVES

As described in the Scope of Work dated June 3, 2010, investigation activities at the Site have been divided into multiple phases. Future stages of work will be developed in consultation with VT DEC. The objectives of Stage I of The Johnson Company's limited Site investigation were to evaluate:

- the horizontal extent of off-site PCB transport in groundwater;

- whether PCB-containing groundwater is discharging to nearby surface water bodies, including the Roaring Branch, Duck Pond, and unnamed tributary to Furnace Brook; and
- whether DNAPL is present at the Site.

These objectives were accomplished through the installation and sampling of soil borings, shallow monitoring wells, deep monitoring wells, and piezometers. Stage II of the investigation will be developed following review of the data described in this report.

2. SOIL SAMPLING

2.1. SOIL SAMPLING PURPOSE AND GENERAL APPROACH

Soil sampling conducted at the Site during previous investigations focused on shallow soil contamination by PCBs that could pose a direct contact risk to persons occupying the Site. As a result of these investigations, identified contaminated shallow soils containing PCBs have been removed or covered by an earthen cap. Deeper soil sampling was not conducted because of the focus on addressing direct contact risks and the high percentage of cobbles in subsurface soils did not allow collection of samples using hollow stem auger or direct push drilling techniques. Therefore, little geologic information was available about the Site at depth, including any information regarding the presence of geologic features that could influence DNAPL migration (e.g., layers of fine-grained soil deposits).

Soil borings were completed at twelve locations in this investigation (shown on Figure 2 as one soil boring and 11 monitoring well locations). Seven “shallow” borings were completed at approximate depths of 15 to 20 feet below ground surface (ft bgs); five “deep” borings were completed immediately above an apparent confining layer at a depth of approximately 30 to 35 ft bgs. Three of these deep borings (MW-3D, MW-4D, and MW-6D) were collocated with existing shallow monitoring wells. General objectives of the soil borings were as follows:

- to install monitoring wells at selected locations (monitoring wells are further described in Section 3.2);
- to assess the presence or absence of PCB-containing DNAPL at the Site using observations of staining, hydrophobic dye testing, and laboratory analysis of

recovered soils for PCBs and DEHP; and laboratory analysis of groundwater samples collected from paired (shallow/deep) monitoring wells for PCBs and DEHP; and

- to improve geologic characterization at the Site by using a drilling technique that would enable collection of continuous core samples; in particular, to determine whether an impeding or confining layer is present beneath the Site that would potentially arrest and/or redirect downward migration of any DNAPL present.

Hydrophobic dye testing and observations of staining were used to select samples for laboratory analysis, as described below.

2.2. SOIL SAMPLING LOCATIONS

Soil boring and monitoring well locations installed by The Johnson Company in the 2010 investigation are described in Text Table 2.2.1, below. All soil borings and existing monitoring well locations are presented on Figure 2 (2010 locations are noted). The Scope of Work dated June 3, 2010 specified that three deep borings would be installed on-site, with an additional two borings being completed off-site if DNAPL was observed in the on-site borings. Four deep soil borings were installed on the Site to assess DNAPL presence within an area of known groundwater contamination (MW-3D and SB-16), and a location upgradient (MW-4D) and downgradient (MW-6D) of this area. One deep boring was installed off-site to assess the extent of an apparent confining layer observed on the Site, and to provide a means of comparing concentration changes with depth at a downgradient location. Off-site shallow soil borings (MW-7 through MW-13) were installed primarily for the purpose of sampling groundwater downgradient of the Site, as described in Section 3.2. After an apparent confining layer was encountered at a shallower depth than expected (approximately 29.5 to 32.5 ft bgs) in the initial on-site wells and one additional off-site deep boring (MW-3D, MW-4D, MW-6D, and MW-9D), the Scope of Work was modified following consultation with VT DEC, and an additional soil boring (initiated as SB-15, but changed to SB-16 after refusal was encountered at 8 ft bgs) was completed on-Site to evaluate the extent of DNAPL in the vicinity of MW-3.

Text Table 2.2.1 Soil Boring Locations		
Location Name	Description	Installation Rationale
MW-3D	Southern end of former building location, paired with existing MW-3	Evaluate potential presence of DNAPL through direct observation and concentration trends with depth; water table well MW-3 has consistently shown highest PCB concentrations in groundwater
MW-4D	Eastern end of former building location, paired with existing MW-4	Evaluate potential presence of DNAPL
MW-6D	Western end of former building location, paired with existing MW-6	Evaluate potential presence of DNAPL through direct observation and concentration trends with depth
MW-7	Northern bank of Roaring Branch	Evaluate PCB concentrations at location potentially downgradient of Site
MW-8	Southwestern corner of Little League property	Evaluate PCB concentrations at location potentially downgradient of Site
MW-9	Western edge of Little League property, paired with new well MW-9D	Evaluate PCB concentrations at location potentially downgradient of Site
MW-9D	Western edge of Little League property, paired with new well MW-9	Evaluate potential presence of DNAPL using dissolved-phase concentration trends with depth
MW-10	Little League parking lot	Evaluate PCB concentrations at location potentially downgradient of Site
MW-11	Northeast edge of Little League property	Evaluate PCB concentrations at location potentially downgradient of Site
MW-12	North side of Plasan driveway	Evaluate PCB concentrations at location potentially downgradient of Site
MW-13	Adjacent to Duck Pond	Evaluate PCB concentrations in groundwater potentially discharging to Duck Pond
SB-15/16	South of MW-3D (first attempt and second attempt, only SB-16 is mapped on Figure 2)	Evaluate extent of NAPL encountered during drilling of MW-3D

2.3. SOIL SAMPLING METHODS

2.3.1. *Soil Borings*

Under supervision of The Johnson Company, soil borings were completed by Boart Longyear Drilling Services during the weeks of July 26 and August 2, 2010. All borings were completed using a track-mounted rotosonic drill rig. The rotosonic drilling method was employed because of its ability to achieve high-percentage soil recovery in difficult drilling

terrain. This type of drill rig operates by vibrating the entire drill string at high frequency. As the drill string vibrates, it is rotated to distribute the energy of the vibrations evenly along the circumference of the bit. The resonance induced by this vibration allows the bit to advance more rapidly through the subsurface by shearing fine-grained materials and fracturing coarser materials (cobbles and boulders). The drill rig was configured to use a 6-inch diameter outer casing. Soils were sampled continuously during drilling using a 5-foot long, 4-inch diameter core barrel installed inside the outer casing. Recovered soils were emptied into a plastic sleeve for geologic logging, sampling, hydrophobic dye testing, and screening for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID). Although PCBs and DEHP would not be expected to produce a PID response, monitoring was performed due the reported presence of VOCs at the Site.

Water used for drilling was stored in 250-gallon polyethylene tanks. The tanks were filled from a fire hydrant on Bowen Road adjacent to the Site. A sample was collected from one of these water tanks for analysis of PCBs by EPA Method 8082 and DEHP by EPA Method 8270D. No targeted analytes were detected in the tank water sample.

2.3.2. Hydrophobic Dye Testing

During the drilling of deeper monitoring wells, hydrophobic dye testing was performed to assess the presence of DNAPL. This is a qualitative field screening method employing a dye powder that dissolves only in hydrophobic substances (e.g., oils and fats), producing a deep red color. The powder does not dissolve in water and will produce no color in the absence of hydrophobic substances. One to four dye tests were performed for each 5-foot interval of recovered soils below a depth of 10 ft bgs. For each test, approximately 10 grams of soil were collected as a composite of recovered soils (excluding gravel and cobbles). Where visible evidence of contamination, such as staining, was noted, soils were collected from the area of contamination. Soils were placed in a clean 40-mL glass container, to which approximately 0.5 gram of hydrophobic dye (Oil-Red-O) and 15 mL of distilled water was added. The jar was then manually agitated to facilitate contact between the dye and any NAPL present.

2.3.3. Laboratory Sample Collection

Text Table 2.3.3 summarizes the soil samples collected for laboratory analysis. Soil samples were initially collected for analysis of PCBs only, but after the discovery of stained soils during the drilling of MW-3D, DEHP was added to the sampling program after consultation with VT DEC. Soil samples were collected in 4-ounce amber jars, placed on ice, and submitted by courier to Eastern Analytical, Inc. (EAI) of Concord, New Hampshire for analysis of PCBs and DEHP. PCB samples were analyzed by EPA Method 8082 with Soxhlet extraction and DEHP samples were analyzed by EPA Method 8270D.

Text Table 2.3.3 Summary of Soil Samples			
Boring Name	Sample Collection Depth	Analytes	Rationale
MW-3D	10 – 15 ft	PCBs, DEHP	Black staining, tar-like odor, visible red coloration during dye test
MW-3D	20 – 25 ft	PCBs, DEHP	Visible red coloration during dye test
MW-3D	25 – 25.5 ft	PCBs, DEHP	Visible red coloration during dye test
MW-4D	30 – 35 ft	PCBs	Bottom of boring; no evidence of contamination in boring
MW-6D	20 – 25 ft	PCBs	Slight visible red coloration during dye test
MW-6D	30 – 35 ft	PCBs	Bottom of boring
MW-9D	25 – 30 ft	PCBs, DEHP	Bottom of boring
MW-10A	1.6 – 2.6 ft	PCBs, DEHP	Black staining, tar-like odor
SB-16	10 – 15 ft	PCBs, DEHP	Visible red coloration during dye test
SB-16	25 – 30 ft	PCBs, DEHP	Bottom of boring

2.4. SOIL SAMPLING RESULTS

2.4.1. *Geologic Observations*

Boring logs are included in Appendix B. Geologic observations have been summarized in two cross sections. Cross section locations are shown on Figure 3a; cross sections are presented on Figures 3b and 3c. Multiple drilling attempts were necessary to reach the targeted depths at several locations due to the presence of large cobbles and boulders in the subsurface. Three drilling attempts were made at MW-10, and these borings were logged as MW-10A, MW-10B, and MW-10 (the completed boring). Similarly, refusal was encountered at a shallow depth (8 ft bgs) during drilling of SB-15, so an additional adjacent boring (SB-16) was completed to the targeted depth.

The Site and surrounding area considered in this investigation are underlain predominantly by poorly sorted glacial drift to a depth of 29.5 to 32.5 feet, at which an apparent confining layer was encountered (sandy silt, silty clay, and/or clay).

Surficial soils generally consist of a thin layer of fine to medium sand with some silt and organic material. This layer ranges from non-existent to 2.5 feet thick, and is thickest to the north of the Site. This surficial layer is underlain by the aforementioned poorly sorted glacial drift. Grain-size in the drift ranges from trace silt and clay to cobbles and boulders. Sand occurs throughout, ranging in size from fine to coarse. The cobbles are a massive, vitreous, white or pink to buff colored quartzite. Granular structure and bedding planes are visible in the larger stones. Some gravel pieces are clearly angular pieces of larger cobbles, and some pieces were fractured with pressure applied by hand. The sand appears to be predominantly of same material as the gravel and cobbles, and is found mostly as the matrix between larger grains, although several sand lenses of various grain size and thickness are noted at different depths. The material is generally poorly sorted, with occurrences of cobbles and trace silt found throughout the drift layer. In the deeper borings, a layer of silty clay to clay was found at depths of 29.5 to 32.5 ft bgs. In all deeper borings, an abrupt transition from sand to silt or clay was noted at this depth;

below this transition, the material became progressively finer, with concomitant increases in material plasticity and durability.

2.4.2. Visual Indications of Contamination

Stained soils were observed predominantly in the vicinity of MW-3; heavy black and gray staining was noted from approximately 5 to 17 feet below ground surface (see Photo 3). Similar staining was observed on SB-16, but within a more limited interval (1.7 to 3.5 ft bgs). The stained soils were noted to exhibit a tar-like odor.

A limited area of staining was observed in MW-10A and MW-10B (initial drilling attempts for MW-10). In MW-10A, stained soils were observed from approximately 1.6 to 2.6 ft bgs; staining in MW-10B was from approximately 1.6 to 2.2 ft bgs. The stained soils were noted to exhibit a tar-like odor. No staining was observed in MW-10.

2.4.3. Hydrophobic Dye Testing Results

All hydrophobic dye test results are presented in Table 1. The results of the dye testing are generally not considered to be quantitative. However, the pattern of staining in the vial can give an indication of relative DNAPL saturations; at lower saturations, red staining will appear as streaks or smears on the vial of the wall only, while at greater saturations, stained NAPL will begin to accumulate in the bottom of the vial. Low saturations of DNAPL (< 2%) may not produce sufficient discoloration to visually determine the presence of DNAPL. In the soils encountered in this investigation, higher DNAPL saturations initially produced smearing and floating red-stained droplets; several days were required for the droplets to accumulate at the bottom of the vial.

Red staining indicative of DNAPL was detected in soils from three borings: MW-3D, MW-6D, and SB-16. The greatest vertical extent of DNAPL observed was in MW-3D, where dye testing indicated the presence of DNAPL in all intervals tested (see Photo 2 in Appendix A). DNAPL droplets were observed in samples from 10-15 ft bgs, 15-20 ft bgs, and 20-25 ft bgs. Streaks were observed on the side of the vial containing soil from 25-30 ft bgs, but no droplets were observed.

In MW-6D, dye tests from only one interval (20-25 ft bgs) indicated the presence of DNAPL. Two tests were initially performed at this location, showing slight red coloration on the walls of the vial. Two additional tests were performed, with no visible red coloration at the time of testing; however, after the passage of several weeks, slight red coloration was present in all four vials.

In SB-16, red droplets and smearing were observed in the dye test performed on soils from 10-15 ft bgs, but no red coloration was noted in soils from any other interval.

2.4.4. Laboratory Results

Laboratory results from soil samples are presented in Table 2 and shown on Figure 4. PCBs were detected in soil samples collected from MW-3D, MW-6D, and SB-16; no PCBs were detected in samples from MW-4D or off-site locations MW-9D and MW-10A. All PCBs detected in soil samples were identified as Aroclor 1016 by the laboratory; however, the analyst reported that the sample chromatograms bore similarity to standard chromatograms of both Aroclor 1016 and Aroclor 1242. Aroclor 1016 concentrations were greatest in MW-3D, ranging from 3,000 mg/kg (20.0 – 25.0 ft bgs) to 7,000 mg/kg (25.0 – 25.5 ft bgs). These concentrations, which approach percent-levels, are consistent with the presence of DNAPL.

In MW-6D, Aroclor 1016 was detected at 210 mg/kg at a depth of 20-25 ft, but decreased to 0.19 mg/kg in the deepest sample from the boring (30 – 35 ft bgs). Hydrophobic dye tests indicated the presence of DNAPL in the sample collected from 20-25 ft bgs, but at a lower saturation than the samples collected from MW-3D (i.e., no droplets were present). The dye test did not indicate the presence of DNAPL in the deeper sample.

In SB-16, Aroclor 1016 was detected at 50 mg/kg at a depth of 10-15 ft bgs; hydrophobic dye testing indicated the presence of DNAPL in this sample. However, this reported concentration is two orders of magnitude below those reported in MW-3D, where dye testing results indicated comparable DNAPL saturations. Therefore, PCBs appear to be a less significant component of this DNAPL.

Only a subset of soil samples was analyzed for DEHP; among these, DEHP was detected in all soils where PCBs were also detected. However, the ratio of DEHP to PCB concentrations varied over approximately two orders of magnitude between the samples. The DEHP to PCB ratio was higher in shallower soil samples (48 in SB-16 (10-15'), 6.8 in MW-3D (10-15')) and lower in deeper soil samples (1.0 in MW-3D (20-25'), 0.5 MW-3D (25-25.5')).

3. GROUNDWATER SAMPLING

3.1. GROUNDWATER SAMPLING PURPOSE AND GENERAL APPROACH

3.1.1. Shallow Monitoring Wells

Seven shallow monitoring wells were installed to evaluate the extent of off-site dissolved PCB migration in shallow groundwater. Results from previous investigations had indicated groundwater flow to the northwest, with detectable concentrations of PCBs in MW-6, near the western boundary of the Site; however, no off-site wells had been installed in this direction.

3.1.2. Piezometers

Nine piezometers were installed in the vicinity of the Site to assess potential discharges of groundwater to the Roaring Branch, Duck Pond, Greene Pond, and an unnamed tributary to Furnace Brook. By comparing water levels inside and outside the piezometer, a determination was made as to whether the surface water body was gaining (receiving groundwater) or losing (discharging to groundwater) at the time of measurement.

3.1.3. Deep Monitoring Wells

Three deep monitoring wells were installed on the Site (MW-3D, MW-4D, and MW-6D) and one deep monitoring well was installed off-site (MW-9D) to evaluate whether DNAPL may be present at the Site and, if so, if a potential confining layer exists that may interrupt its downward migration. In addition to the soil sampling techniques used to assess DNAPL presence (visual observation, hydrophobic dye testing, and laboratory analysis), installation of paired (shallow and deep) monitoring wells provides a means of examining changes in dissolved-phase concentrations with depth (concentration increases with depth would be consistent with DNAPL presence).

3.1.4. Additional Sampling

During the course of the investigation, a residential property owner on Park Street informed The Johnson Company of a disused shallow well in his basement and requested that a sample be collected from this well for PCB analysis. In consultation with VT DEC, a sample was collected from this well and the outlet of a gravity drain from the basement of the same residence. In addition, VT DEC collected a water sample from the plumbing of another nearby residence that is currently served by a shallow private well.

3.2. GROUNDWATER SAMPLING LOCATIONS

Monitoring well locations are presented on Figure 2. During the 2010 investigation, monitoring wells were installed immediately following soil boring completion at locations MW-3D, MW-4D, MW-6D, MW-7, MW-8, MW-9, MW-9D, MW-10, MW-11, MW-12, MW-13, described in Section 2.2. The shallow monitoring well, deep monitoring well, and piezometer locations are described below.

3.2.1. Shallow Monitoring Wells

Results from previous investigations suggested that groundwater flow across the Site was generally to the northwest. Based on this assessment, six shallow monitoring wells (MW-7 through MW-12) were installed along two adjoining transects: one due north from the northern edge of the Roaring Branch across the Little League fields, and another to the east-northeast from the Little League parking lot to the property occupied by Plasan on the north side of Bowen Road. The positioning of these transects was intended to determine the northerly and southerly extents of any off-site PCB plume in shallow groundwater. In addition, monitoring well MW-13 was installed at the edge of the Duck Pond to evaluate PCB concentrations in groundwater potentially discharging to the pond.

3.2.2. Piezometers

Piezometers PZ-01 through PZ-06 were installed in the Roaring Branch at an approximate spacing of 300 feet, from PZ-01, approximately 100 feet upstream of the Site, to PZ-06, approximately 400 feet downstream of the Park Street Bridge and approximately 1,200 feet downstream of the Site. PZ-12 was installed in an unnamed tributary to Furnace Brook,

approximately 50 feet north of monitoring well MW-12. PZ-13 was installed in the Duck Pond, approximately 30 feet west of MW-13. PZ-14 was installed in a small pond on a residential property at 403 Park Street (Greene Pond), located west of the Little League fields. This pond was apparently created by damming the roadside ditch adjacent to Park Street; the ditch flows northerly from the Greene Pond along Park Street into the Duck Pond.

3.2.3. Deep Monitoring Wells

Three deep monitoring wells were installed on the Site (MW-3D, MW-4D, and MW-6D). These wells were collocated with existing shallow monitoring wells. As described in Section 2.2, these deep monitoring wells were positioned to assess potential DNAPL presence at locations upgradient of, downgradient of, and within an area of PCB contamination in groundwater. One deep monitoring well (MW-9D) was installed downgradient of the Site. This monitoring well was located to assess the extent of the apparent confining layer observed on the Site, and to provide a means of comparing concentration changes with depth at a downgradient location.

3.2.4. Additional Sampling Locations

Three water samples were collected from a residential property located at 403 Park Street adjacent to the Little League fields (the Greene property). One sample (“Greene Well”) was collected from a dug well located inside the basement of the residence. The well was constructed of stone and was approximately 6.5 feet deep and 3 feet in diameter. An additional sample (“Greene Pipe”) was collected from a white plastic drain pipe emerging at the northwestern edge of the lawn of this property, emptying into the small pond (Greene Pond, as described in Section 3.2.2; see Figure 2 and Photo 1 in Appendix A). The occupants of the house reported that the pipe was connected to a basement drain. Originally, only one pipe was installed, but a second was added to increase the capacity. A third sample was collected from the kitchen sink faucet by VT DEC personnel (sample name “Greene”).

One water sample was collected by VT DEC personnel from a second residential property located at 406 Park Street. This residence is served by a well located in the basement,

estimated to be approximately 4 feet deep. The sample (“Watson”) was collected from a spigot located before the pressure tank in the plumbing system.

3.3. GROUNDWATER SAMPLING METHODS

3.3.1. *Monitoring Well Installation*

Monitoring wells were installed in eleven borings, including seven wells screened across the water table and four wells screened directly above an apparent confining layer at approximately 30 ft bgs. Depths and screen lengths of the installed monitoring wells are summarized in Text Table 3.1 (below); full construction details are provided in Appendix B. Monitoring wells were constructed of a 2-inch diameter PVC screen with 0.010-inch aperture slots, attached to a 2-inch diameter PVC riser. Nominal 10-foot length screens were used for shallow/water table wells, and 5-foot screens were used for deeper wells (MW-3D, MW-4D, MW-6D, and MW-9D). Filter sand (#0 size) was placed around the screen to a depth of 1 to 2 feet above the top of the screen. In shallow wells, bentonite chips were used to fill the annular space from the top of the sandpack to approximately 0.5 ft bgs. In deeper wells, a 1- to 2-foot thick layer of bentonite chips was placed on top of the sandpack, followed by a mixture of bentonite grout and Portland cement. The cement/grout mixture was pumped into the annular space from bottom to top using a tremie pipe. Monitoring wells MW-3D, MW-4D, MW-6D, and MW-7 were completed above the ground surface using a steel protective well guard. The remaining monitoring wells were completed in a flush-mounted road box installed in a concrete pad.

Text Table 3.1 Well Depths and Screen Lengths		
Well Name	Approximate Total Depth	Screen Length
MW-3D	28 ft	5 ft
MW-4D	30 ft	5 ft
MW-6D	31 ft	5 ft
MW-7	12 ft	10 ft

Text Table 3.1 Well Depths and Screen Lengths		
Well Name	Approximate Total Depth	Screen Length
MW-8	13 ft	10 ft
MW-9	12 ft	10 ft
MW-9D	27 ft	5 ft
MW-10	12 ft	10 ft
MW-11	12 ft	10 ft
MW-12	13 ft	10 ft
MW-13	18 ft	10 ft

3.3.2. *Monitoring Well Development*

All newly installed monitoring wells were developed on August 24-25, 2010. During development, water was removed from the wells using a peristaltic pump, inertial valve pump with surge block (Waterra), and/or submersible pump (Grundfos). The volume of water removed from each well ranged from approximately 5 to 55 gallons. All well development water was transferred to 55-gallon drums for appropriate disposal.

3.3.3. *Groundwater Elevation Measurement*

The depth to groundwater was measured in all accessible and completed monitoring wells on July 29 and August 6, 2010. The depth to groundwater was measured in all monitoring wells on August 30, 2010. Monitoring well MW-3 and the newly installed on-site deep monitoring wells were checked for the presence of free product on August 24, 2010 using a Solinst interface probe. No free product was detected in any of the wells, but the interface probe was noted to feel oily on a gloved hand upon removal from MW-3. On August 30, a Heron interface probe was placed in MW-3, and a layer of free product (i.e., DNAPL) approximately 0.2 feet thick was detected beginning at 12.1 feet below the top-of-casing (depth to water at this time was approximately 9 feet below the top-of-casing). A bailer was then lowered to the bottom of the

well. An interface between a clear fluid and a brownish fluid was observed in the bailer; however, both fluids had an oily feel.

Monitoring wells EPA-5, EPA-6, EPA-7, and EPA-8 were originally installed through an approximately 10-15 foot high levee along the Roaring Branch. A stream restoration project was completed in this reach of the river during the summer of 2010, a component of which included the excavation of this levee and construction of a new levee closer to the Site. Monitoring wells EPA-5 through EPA-8 remained in place during the excavation; however, the upper portions of the screens of these monitoring wells were found to be significantly above ground surface following excavation. Approximately 0.5 feet to 1.5 feet of screen were exposed on EPA-6 through EPA-8; approximately 5 feet of the screen of EPA-5 were exposed. A water level indicator placed in this well indicated that it was dry. On August 30, 2010, The Johnson Company cut the existing casings of EPA-6 through EPA-8 to a height approximately three feet above ground surface and installed replacement steel well guards around these casings. Although the screen remained above ground surface, the well guards are expected to minimize surface water flow into the wells.

Following this work, the top-of-casing elevations of all intact monitoring wells and piezometers were surveyed by Guntlow and Associates, Inc. of Williamstown, Massachusetts. Geographic coordinates of the wells were recorded by The Johnson Company using a Trimble GPS unit with submeter accuracy. Piezometer PZ-02 was apparently destroyed during construction activities and was not surveyed.

3.3.4. Groundwater Sample Collection

During the week of August 30, 2010, all accessible monitoring wells were purged and sampled using low-flow procedures (except MW-3, where free product was present). Monitoring wells EPA-2, EPA-5, and EPA-9 were dry and could not be sampled. It appeared that obstructions were present in EPA-2 and EPA-9 because measured total depths in these wells were several feet less than had been recorded during a previous investigation (Stone, 2005).

All samples were collected using a peristaltic pump with dedicated tubing. The intake of the pump was positioned at the approximate midpoint of the saturated screen. Purging was completed at a rate of 100 to 200 milliliters (mL) per minute. During purging, a YSI multiparameter instrument was used to monitor temperature, specific conductance, dissolved oxygen, pH, oxidation-reduction potential (ORP), and a turbidimeter was used to monitor turbidity. Samples were collected after stabilization of these parameters. For quality control purposes, field duplicates were collected from MW-6 and MW-3D.

Due to the known presence of high concentrations of PCBs at MW-3, a multiparameter instrument was not used to monitor parameters during sampling. Instead, a sample was collected after purging three well volumes.

All samples were submitted to EAI for analysis of PCBs by EPA Method 8082 and DEHP by EPA Method 8270D. In addition, a sample collected from MW-3 was submitted to Columbia Analytical Services, Inc. (CAS) of Houston, Texas for analysis of coplanar PCB congeners by EPA Method 1668A. EAI reported a small amount of NAPL in this sample; this NAPL was separated and analyzed for specific gravity using Standard Method (SM) 2710F.

3.3.5. Piezometer Installation and Measurement

Nine piezometers were installed during the weeks of July 26, August 2, and August 23, 2010. Piezometers consisted of a 0.5-foot stainless steel screen (Solinst Model 615) connected to a 5-foot length of 0.5-inch inner diameter polyethylene tubing, within a 5-foot length of 0.75-inch diameter iron pipe. A manual slide hammer was used to drive the piezometer until the top of the screen was approximately 2 feet below the bed of the stream or pond. An electronic water level indicator was used to measure the depth to water inside the polyethylene tubing and outside the metal pipe on July 27, July 28, July 29, August 6, and August 30, 2010. An attempt was made to measure the water levels during a period of relatively high flow after a thunderstorm on August 5, 2010 (see Photo 4 in Appendix A), but the piezometers could not be safely accessed under the high-flow conditions.

3.3.6. Piezometer Sampling

Samples were collected from piezometers PZ-04, PZ-05, PZ-06, PZ-13, and PZ-14 on August 30 through 31, 2010. Consistent with the Scope of Work dated June 3, 2010, no samples were collected from piezometers PZ-01, PZ-03, and PZ-12 because measured water levels indicated that surface water was recharging groundwater at these locations. Because the water level in the Roaring Branch had retreated beneath the streambed at PZ-04, PZ-05, and PZ-06 on the days samples were collected), it was not possible to determine if the Roaring Branch was losing or gaining at these points, although previous monitoring indicated that PZ-04 was a gaining reach, PZ-06 was a losing reach, and PZ-05 had changed from a losing reach in July to a gaining reach in August. Piezometer PZ-02 was apparently destroyed during construction activities and was not sampled. Piezometers did not yield sufficient flow to collect low-flow samples. Instead, the piezometers were purged dry, and samples were collected from the recharge.

3.3.7. Additional Water Sample Collection Methods

Sample “Greene Well” was collected from a dug well located inside the basement of the residence at 403 Park Street using the low-flow procedures described in Section 3.3.4. Sample “Greene Pipe” was collected from the drain pipe described in Section 3.2.4 by positioning the sample bottles under the end of the pipe to directly capture the discharge. At the time of sampling, the flow from the pipe was measured to be approximately 150 mL/minute. A green-colored pipe emerging adjacent to the white pipe was dry at the time of sampling. During a previous Site visit, both pipes had been observed to be flowing, although no flow rate measurements were collected.

Sample “Greene” was collected by VT DEC personnel by directly filling sampling containers from the faucet of the kitchen sink at the 403 Park Street residence. Sample “Watson” was collected by VT DEC personnel from a spigot located before the pressure tank in the plumbing system. An upstairs tap was run for 10 minutes prior to collecting the sample.

3.4. GROUNDWATER AND PIEZOMETER SAMPLING RESULTS

3.4.1. Groundwater Flow Direction

Measured groundwater elevations are presented in Table 3. Elevations from August 6 and August 30, 2010 were used to construct water table potentiometric maps (Figures 5 and 6). The hydraulic gradient was generally oriented to the northwest, approximately parallel to the Roaring Branch. Using the interpreted contours, the average water table gradient was calculated to be approximately 0.02 on both August 6 and August 30, 2010 with a gradient direction to the northwest from the Site followed by a possible transition to the west-northwest downgradient of wells MW-10, MW-8 and MW-7. Vertical gradients between all paired monitoring wells were indicative of downward groundwater flow.

3.4.2. Groundwater / Surface Water Interaction

The measured depths to water inside and outside the installed piezometers are presented in Table 4; calculated head differences between the stream and the streambed are presented in Figure 6. In general, measured water levels indicated that the Roaring Branch was a losing stream, with some temporal or location-specific exceptions. Piezometer PZ-04 was the only location where the Roaring Branch was consistently gaining, possibly as a result of its placement immediately below a drop in streambed elevation. Still, water levels differences between the stream and piezometer were relatively small at PZ-04. Water levels in the piezometer installed in the Furnace Brook tributary north of the MW-12 indicated that this stream was losing, while water levels in the Duck Pond and the Greene Pond indicated that these surface water bodies were gaining. This conclusion is further supported by the presence of seeps near the base of the slope above the Duck Pond to the southeast.

3.4.3. DNAPL Observations

An approximately 0.2-inch thick layer of DNAPL was measured in MW-3 using a Heron interface probe; this likely represents an accumulation of DNAPL in the sump of the well and does not correspond to a layer of contiguous DNAPL in the soil. The laboratory reported the presence of a small amount of NAPL in the groundwater sample collected from MW-3 (although DNAPL was present in the bottom of this well, the sample was collected from the middle of the

saturated screen using a peristaltic pump). The laboratory determined the NAPL to have a unitless specific gravity of approximately 0.98 (i.e. the density of the NAPL was close to but lighter than water). This is consistent with an observation of NAPL lighter than water (LNAPL) during excavation of a test pit in the vicinity of MW-3 during a previous investigation (Wehren, 1991). Previous laboratory analysis of this NAPL demonstrated the presence of a mixture of constituents, including petroleum, chlorinated solvents, PCBs, and DEHP (Wehren, 1991). Therefore, both DNAPL and LNAPL appear to be present at this location.

As discussed in Section 2.4.3, hydrophobic dye testing and soil concentration results from MW-3D provide evidence of the presence of PCB-containing DNAPL at this location. This is not contradicted by the lack of an observed DNAPL accumulation in MW-3D. DNAPL may not significantly accumulate in a monitoring well for many reasons including but not limited to: a capillary pressure barrier created by the slots in the well screen; the lack of sufficient time following drilling for DNAPL to migrate through the filter pack and enter the well; and limited DNAPL thickness and volume at that specific location.

During the development of MW-3D with a manual inertial pump and surge block, apparent oil droplets were noted in the extracted water. The extracted water remained in a 5-gallon bucket for several days, and when the contents of the bucket were emptied into a 55-gallon drum, an apparent oily layer was noted at the bottom of the bucket.

3.4.4. Groundwater Concentrations

All results from groundwater and piezometer sampling are presented in Tables 5 and 6. PCB results are presented on Figure 8 and DEHP results are presented on Figure 9. PCBs were detected at concentrations above the Vermont Groundwater Enforcement Standard (VGES) of 0.5 µg/L in wells located both on- and off-site. DEHP was detected above the VGES of 6.0 µg/L in three on-site wells (MW-3, MW-3D, and MW-6D) but was not detected off-site.

Although PCBs do not rapidly degrade in the environment, the congener profile of PCBs in the environment is modified by weathering processes such as dissolution, vaporization, volatilization, dechlorination, and biological alteration (e.g., Johnson et. al., 2006). In samples

where significant weathering has occurred, the sample chromatogram may differ from Aroclor standards, and it may be difficult to determine which Aroclor the sample chromatogram most closely represents (e.g., Erickson, 1997). In previous investigation, PCBs detected in groundwater have been identified as Aroclors 1016, 1232, and 1242. Even in the absence of severe weathering, it can be difficult to distinguish between these three Aroclors. As a result, different laboratories or analysts may not agree on the determination of PCBs in the same sample. Therefore, laboratory PCB results should be interpreted in the context of the known Aroclor use at the Site, which consists of Aroclor 1242 before 1971, and Aroclor 1016 from 1971 to 1978. (VT AEC, 1976; VT DEC, 1991.) In particular, laboratory results reported as Aroclor 1232 in samples from previous investigations and this investigation are more likely to be Aroclors 1016 and/or 1242, based on this history of the Site and the lack of reported use of Aroclor 1232 as a dielectric fluid (Johnson et. al., 2006).

Aroclor 1016 was used exclusively as a dielectric fluid in capacitors (Johnson et al, 2006). In addition to its use in capacitors, Aroclor 1242 was used in heat transfer and hydraulic fluids, carbonless copy paper, and in plasticizers and adhesives. In capacitor applications, Aroclors 1242 and 1016 are reported to have similar properties, and almost all capacitor use switched from Aroclor 1242 to Aroclor 1016 when the latter was introduced in 1971. According to a representative of the Jard Company, the switch was made in an effort to avoid the environmental persistence of the Aroclor 1242 (Rollins, 1975).

Aroclors 1016 and 1242 both have low solubilities in water; reported solubilities for these two formulations are 420 µg/L and 240 µg/L, respectively (Erickson, 1997). Although these values are low, Aroclors 1016 and 1242 are among the most soluble PCB formulations: for example, the reported solubilities of the more heavily-chlorinated Aroclors 1254 and 1260 are 52 µg/L and 3 µg/L, respectively. All PCBs are hydrophobic and would be expected to adsorb strongly to organic carbon in soils. However, Aroclors 1016 and 1242 are less hydrophobic than Aroclors 1254 and 1260; octanol-water partition coefficients for Aroclors 1016 and 1242 exceed those for 1254 and 1260 by an order of magnitude or more (ATSDR, 2000). As a result,

Aroclors 1016 and 1242 in would be expected to migrate farther than Aroclors 1254 or 1260 in groundwater.

Although PCBs are likely to be present in soils in multiple areas of the Site, groundwater analytical results suggest that a source in the vicinity of MW-3 / MW-3D has the greatest impact on groundwater. The highest reported PCB concentration was in the sample collected from MW-3, where the laboratory identified Aroclor 1232 at a concentration of 14,000 µg/L. This result from is generally consistent with previous results from Stone (2005) and TRC (1992), as shown in Text Table 3.2 below:

Text Table 3.2 PCB Results from MW-3			
Investigation	Sample Date	Result	Concentration
JCO, 2010	9/2/2010	Aroclor 1232	14,000 µg/L
ECS, 2009	12/3/2009	Aroclor 1016	666 µg/L 1,980 µg/L (duplicate)
Stone, 2005	8/1/2005	Aroclor 1232	13,000 µg/L
TRC, 1992	8/18/1992	Aroclor 1232 or 1016	13,000 µg/L
Wehran, 1991	6/13/1990	Aroclor 1242	Aqueous phase: 280,000 µg/L 390,000 µg/L (duplicate) Oil phase: 2,500 mg/kg 3,100 mg/kg (duplicate)

The PCB concentrations reported in Text Table 3.2 are greatly in excess of reported measured solubility values of Aroclors 1016, 1232, and 1242, all of which are less than 500 µg/L (e.g. Erickson, 1997; ATSDR, 2000).

At some sites, the reason for the presence of “dissolved” PCB concentrations in excess of theoretical solubility is the presence of high humic materials content in the sample; PCBs adsorb strongly to humic materials but can be released during the extraction process. This is likely not

the case at the Site: although the samples were not analyzed for humic materials, the analyst reported no indication of humic acids on the chromatogram for 8270D analysis. Another potential explanation is the in-situ formation of an emulsion (i.e., a mixture of oil droplets suspended in water, or water droplets suspended in oil). Emulsions are often associated with the presence of surfactants; however, PCB-water emulsions have been shown to form even in the absence of surfactants: this type of emulsion is known as a Pickering emulsion. The formation of stable PCB-water Pickering emulsions using bentonite as a stabilizer was demonstrated in the laboratory by Roy-Perreault et al. (2005). This is consistent with observations in the field that fluid removed from MW-3 had an oily texture; therefore, it is possible that fluid in MW-3 may consist of an oily mixture of PCB-containing oil and water, allowing the appearance of dissolved PCBs at concentrations higher than theoretical solubility limits.

Although the horizontal and vertical extent of the PCB source area near MW-3 remains unclear, concentrations observed downgradient of this point suggest the presence of a dissolved-phase PCB plume extending at least 1,200 feet downgradient, where PCBs were detected in plumbing connected to a shallow private well (Watson Well). The width of the plume (defined as PCB concentrations above the detection limit) is approximately 500 feet in width where it crosses the shallow monitoring well transect defined by MW-7 through MW-12.

Congener-specific analysis of the MW-3 sample indicated the presence of 11 out of 12 coplanar, or “dioxin-like” PCBs; only PCB-169 was not detected in the sample. As shown in Table 6, the TEQ is calculated by multiplying the concentration of each dioxin-like congener by the toxicity equivalency factor (TEF), which indicates how toxic that congener is compared to a reference dioxin, 2,3,7,8-TCDD. The resulting TEQs for the 12 congeners are summed and the total TEQ is compared against the VGES for 2,3,7,8-TCDD. The dioxin-like congeners make up a small portion of the total PCB mass (approximately 0.4%) in the MW-3 sample. PCB-77 and PCB-118 were the most abundant coplanar congeners identified in the sample, at 23.7 µg/L and 19.5 µg/L, respectively. However, the total toxic equivalent (TEQ) to 2,3,7,8-dibenzo-p-dioxin (2,3,7,8-TCDD) is driven largely by the presence of PCB-126, at 0.0918 µg/L; this congener,

which is identified by the World Health Organization as the most toxic dioxin-like congener, contributes 72% of the total TEQ.

PCBs were not detected in the three piezometers sampled in the Roaring Branch during a period of relatively low flow in which the Roaring Branch was gaining at the sampled locations. Assuming these low flow conditions also represent a time of maximum potential for groundwater discharge into Roaring Branch, then it may also be assumed that the potential for PCB discharge at higher flow conditions would be even less. However, additional seasonal monitoring should be considered to more accurately confirm these assumptions.

The lack of detectable PCB concentrations in MW-13 or PZ-13 indicates that the presence of PCBs in the Duck Pond may not be attributable to widespread groundwater discharge at the eastern edge of the pond. However, PCBs were detected in PZ-14 (located in the Greene Pond) as well as in flow collected from the drain pipe emerging at the edge of the Greene property, which discharges into the Greene pond. Because the outflow of the Greene pond flows alongside Park Street to the Duck Pond, groundwater discharge in the vicinity of the Greene property may be a significant mechanism of PCB transport to the Duck Pond.

Further investigation is required to explain the detection of PCBs in MW-12 at 40 µg/L, the highest reported off-site concentration. Interpreted potentiometric contours do not suggest that MW-12 is directly downgradient of the apparent source near MW-3. Further, PCBs were not detected at elevated concentrations in groundwater between MW-3 and MW-12: PCBs were detected at 0.7 µg/L in MW-1 during the current investigation, but this is much lower than the detection at MW-12, and no PCBs were detected in a sample collected from the now-destroyed supply well (previously located between the former Site building and Bowen Road) during a previous investigation, although this well was reported to be 36 feet deep, so it was likely screened below the nearby monitoring wells (Stone, 2005). In addition, PCBs were not detected in a sample collected from a monitoring well installed approximately 200 feet southeast of MW-12 during an investigation at the former U.S. Tsubaki facility (Tighe & Bond, 2001).

The geologic profile A-A' in Figure 3b illustrates that DEHP is present in shallow groundwater at MW-3 and has migrated to lower depths in the same area, but its downgradient impacts are limited to deep groundwater within approximately 500 feet of this area. Pure DEHP has a specific gravity of 0.99 at 20 degrees Celsius and tends strongly to adsorb to clays and sediments (EPA, 2010). The reported DEHP concentration of 450 µg/L in the MW-3 sample approaches or exceeds most literature values of solubility (a range of values in literature of 1.1 to 1,200 µg/L was reported by Staples et al., 1997).

4. SUMMARY

This Limited Phase II Environmental Site Assessment included completion of soil sampling and hydrophobic dye testing to assess the potential presence of PCB-containing DNAPL in soils at the Site; and installation of monitoring wells and piezometers to assess off-site transport of PCBs in groundwater, including potential discharges to surface water. The results of this investigation are summarized in the sections below.

4.1. PCB TRANSPORT IN GROUNDWATER

The combined results of groundwater samples collected from twenty-two monitoring wells, five piezometers, two residential supply wells, and a basement drain pipe, and water levels from 34 locations show the presence of a PCB plume appearing to originate in the vicinity of MW-3 and migrating in a northwesterly direction across the Little League fields to Park Street. The highest PCB concentration reported was 14,000 µg/L in MW-3. The plume (defined as PCB concentrations above the detection limit) is approximately 500 feet in width where it crosses the shallow monitoring well transect installed during this investigation. The downgradient extent of PCB migration in groundwater was not defined; however, PCBs were detected in plumbing connected to a shallow private well approximately 1,200 feet downgradient of MW-3.

PCBs do not typically migrate extensively in the dissolved phase due to their low solubility and strong tendency to adsorb to soil (ATSDR, 2000). The detection of dissolved-phase PCBs in shallow groundwater significantly downgradient of the Site suggests that conditions are present that facilitate the transport of PCBs, possibly by enhancing their solubility.

PCBs were detected in wells installed at the water table and above a silty clay layer at approximately 30 feet bgs. The highest PCB concentration reported in deeper wells was 110 µg/L in MW-3D. Vertical gradients between all paired monitoring wells were indicative of downward groundwater flow.

There does not appear to be significant migration of dissolved-phase PCBs to the Roaring Branch, even though reaches downstream of the Site were recharged by groundwater at the time of sampling.

Direct groundwater discharge to the Duck Pond may not be the source of the previous PCB detection in the Pond. However, results indicate that PCB-containing groundwater is entering the Greene Pond, both directly, through the bed of the pond, and indirectly, through a basement drain pipe. Given that the Greene Pond discharges into a small stream which flows into the Duck Pond, groundwater discharge to the Greene Pond may have contributed to the previous detection of PCBs in the Duck Pond.

The detection of PCBs at 40 µg/L in MW-12 does not appear to be directly connected to the on-site PCB source area near MW-3. Additional investigation is necessary to determine the cause of this detection.

4.2. PRESENCE OF PCB DNAPL

The presence of PCB DNAPL beneath the Site is indicated by the results of hydrophobic dye testing, soil sampling, the presence of accumulated free product in the sump of MW-3, PCB concentrations in groundwater relative to solubility limits, and the depth of PCB detections in groundwater. Of the four deep borings completed on-site, the greatest vertical extent of observed NAPL (up to 30 ft bgs) in soil and the highest PCB soil concentrations (up to 7,000 mg/kg, or 0.7%) were found in MW-3D. NAPL was also observed in MW-6D (20-25 ft bgs) and SB-16 (10-15 ft bgs).

These observations and the presence of accumulated free product in the sump of MW-3 indicate that DNAPL is present at the Site. In addition, observations from previous

investigations and specific gravity analysis of NAPL extracted from the MW-3 groundwater sample suggest that some LNAPL is also present at the Site.

The top of a silty clay confining layer was observed in MW-4D, MW-6D, MW-9D, and SB-16 at depths of 29.5 to 32.5 ft bgs. This layer may have limited the downward migration of DNAPL at the Site.

4.3. DEHP TRANSPORT IN GROUNDWATER

DEHP was detected in three wells at the Site: MW-3, MW-3D, and MW-6D. Although concentrations in all three wells exceeded the VGES (maximum concentration of 450 µg/L), the extent of DEHP contamination appears to be limited in area.

5. RECOMMENDATIONS

Groundwater sampling for PCBs should be continued on a regular basis in order to establish whether seasonal or long-term trends in PCB concentrations are present. It is recommended that monitoring wells EPA-2 and EPA-9 be replaced during the next phase of monitoring well installation. It is not recommended that EPA-5 be replaced, as this well is located cross-gradient of the apparent source area near MW-3 and is within a relatively dense area of the monitoring network.

In addition to sampling of the existing monitoring well network, additional characterization is required to determine the nature and extent of PCBs in the subsurface (NAPL and dissolved-phase) and the potential exposure to PCBs by human and ecological receptors. The characterization tasks outlined below have been grouped according to seven potential objectives for future work at the Site.

Potential Objective A: Determine potential for human exposure to PCB-containing groundwater on residential properties

- Develop inventory of neighborhood residences that contain private wells and/or experience basement flooding.
- Collect samples from private wells and basement drains.

- Collect samples of surface soils or soil in basements that may have come into contact with PCB-containing groundwater.

Collect indoor air samples from residences with elevated concentrations of PCBs in indoor wells or basement soils.

Potential Objective B: Determine downgradient extent of PCB plume in vicinity of Park Street

- Develop inventory of neighborhood residences that contain private wells and/or experience basement flooding.
- Collect samples from private wells and basement drains.
- Install monitoring well transects along Park Street and in wetland area to the west of Park Street. Collect samples to be analyzed for PCBs and other constituents that may facilitate PCB transport.
- If characterization of vertical extent of contamination is desired, additional deep wells should be installed in existing transect on Little League property and in Park Street transect.

Potential Objective C: Confirm discharge of PCB-containing groundwater to surface water bodies

- Continue measuring water levels in existing piezometers over multiple seasons.
- Install additional piezometers (potentially including multilevel piezometers) in Park Street ditch, unnamed tributary to Furnace Brook, and wetland area to the west of Park Street; measure water levels during multiple seasons and collect samples at points of groundwater discharge. Samples would be analyzed for PCBs and other constituents that may facilitate PCB transport.
- Perform mapping of surface water features in the vicinity of the Site.
- Collect surface water samples collocated with piezometers.

Potential Objective D: Evaluate source and extent of PCBs in groundwater near MW-12

- Install transect of monitoring wells along Bowen Road from MW-1 to the east. Collect samples to be analyzed for PCBs and other constituents that may facilitate PCB transport.

- Complete shallow soil borings and install additional monitoring wells near southern and western edges of Plasan facility, where accessible. Collect samples to be analyzed for PCBs and other constituents that may facilitate PCB transport.
- Potentially install wells downgradient of MW-12 after reviewing chemical and potentiometric data obtained from new monitoring wells.

Potential Objective E: Define source extent and nature

- Review historical file to create an inventory of known potential source areas (e.g., leachfields, vaults, dry wells) and documented removal actions that have occurred at each.
- Install numerous on-Site soil borings to determine distribution of PCB DNAPL in the subsurface and presence of geologic features that may impact DNAPL distribution.

Potential Objective F: Prevent off-site migration of PCB plume

- Define source extent and nature as described above in Potential Objective E.
- Determine whether transport of PCBs in groundwater is facilitated in a manner that would impact treatment of the PCB plume (e.g., by colloidal transport, adsorption to dissolved organic matter, etc.)
- Install additional soil borings and/or well transects to collect parameters required for potential treatment or containment options (e.g. treatment by reactive barrier or hydraulic containment via pump and treat.)
- Evaluate potential for excavation of source area.

Potential Objective G: Treat discharge of PCB plume to surface water along Park Street

- Install additional piezometers in ditch on east side of Park Street.
- Collect flow measurements over extended period of time from piezometers, discharge pipe at Greene residence, and ditch. Collect samples to be analyzed for PCBs and other constituents that may facilitate PCB transport.
- Determine feasibility of treating plume discharge via active means (e.g., capture and pumping through carbon) or passive means (treatment barrier).

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TABLES

Table 1
Hydrophobic Dye Testing Results
Former Jard Company Site
Bennington, Vermont

The Johnson Company

Interval (feet bgs)	Boring				
	MW-3D	MW-4D	MW-6D	MW-9D	SB-16
10-15	Red NAPL droplets	No visible red coloration	No visible red coloration	No visible red coloration	Red NAPL droplets, smearing on walls of VOA
15-20	Two tests performed: both have red NAPL droplets	No visible red coloration	No visible red coloration	No visible red coloration	Two tests performed: no visible red coloration
20-25	Two tests performed: red smearing on walls of VOA	No visible red coloration	Four tests performed. Two showed slight red discoloration on walls of VOA; two showed no visible red coloration.	No visible red coloration	Two tests performed: no visible red coloration
25-30	Red NAPL droplets, streaks on side of VOA	No recovery	No visible red coloration	No visible red coloration	No visible red coloration
30-35	No recovery	No visible red coloration	No visible red coloration	-	-

Table 2
Laboratory Results: Soil
Former Jard Company Site
Bennington, Vermont

Boring Depth	Regional Screening Levels (RSLs)		MW-3D	MW-3D	MW-3D	MW-4D	MW-6D
	Residential	Industrial	10 - 15'	20 - 25'	25' - 25.5'	30 - 35'	20 - 25'
Aroclor 1016	3.9	21.0	6,300	3,000	7,000	ND < 0.08	210
Aroclor 1221	0.14	0.54	ND < 800	ND < 800	ND < 2000	ND < 0.08	ND < 30
Aroclor 1232	0.14	0.54	ND < 800	ND < 800	ND < 2000	ND < 0.08	ND < 30
Aroclor 1242	0.22	0.74	ND < 800	ND < 800	ND < 2000	ND < 0.08	ND < 30
Aroclor 1248	0.22	0.74	ND < 800	ND < 800	ND < 2000	ND < 0.08	ND < 30
Aroclor 1254	0.22	0.74	ND < 800	ND < 800	ND < 2000	ND < 0.08	ND < 30
Aroclor 1260	0.22	0.74	ND < 800	ND < 800	ND < 2000	ND < 0.08	ND < 30
DEHP	35.0	120	43,000	3,100	3,200	NA	NA

Boring Depth	Regional Screening Levels (RSLs)		MW-6D	MW-9D	MW-10A	SB-16	SB-16
	Residential	Industrial	30 - 35'	25' - 30'	1.6 - 2.6'	10 - 15'	25 - 30'
Aroclor 1016	3.9	21.0	0.19	ND < 0.08	ND < 0.08	50	ND < 0.08
Aroclor 1221	0.14	0.54	ND < 0.08	ND < 0.08	ND < 0.08	ND < 20	ND < 0.08
Aroclor 1232	0.14	0.54	ND < 0.08	ND < 0.08	ND < 0.08	ND < 20	ND < 0.08
Aroclor 1242	0.22	0.74	ND < 0.08	ND < 0.08	ND < 0.08	ND < 20	ND < 0.08
Aroclor 1248	0.22	0.74	ND < 0.08	ND < 0.08	ND < 0.08	ND < 20	ND < 0.08
Aroclor 1254	0.22	0.74	ND < 0.08	ND < 0.08	ND < 0.08	ND < 20	ND < 0.08
Aroclor 1260	0.22	0.74	ND < 0.08	ND < 0.08	ND < 0.08	ND < 20	ND < 0.08
DEHP	35.0	120	NA	ND < 0.3	ND < 0.3	2,400	ND < 7.5

- 1) All concentrations reported in parts per million (mg/kg).
- 2) ND = analyte not detected; reporting limit provided.
- 3) NA = sample not analyzed for indicated compound.
- 4) DEHP = bis(2-ethylhexyl)phthalate
- 5) PCB analysis performed by EPA Method 8082 with Soxhlet extraction; DEHP analysis performed by EPA Method 8270D.
- 6) Bold = concentration exceeds Residential and Industrial Regional Screening Levels (RSLs).

Table 3
Potentiometric Data
Former Jard Company Site
Bennington, Vermont

Location	Top of Casing Elevation (ft.) (1)	7/29/2010		8/6/2010		8/30/2010	
		DTW (ft.)	Elevation (ft.)	DTW (ft.)	Elevation (ft.)	DTW (ft.)	Elevation (ft.)
EPA-2	684.40	Dry	< 679.70	Dry	< 679.70	Dry	< 679.70
EPA-3	687.11	9.56	677.55	9.11	678.00	10.06	677.05
EPA-4	685.88	8.80	677.08	8.44	677.44	9.24	676.64
EPA-5	686.01	<i>inaccessible</i>		<i>inaccessible</i>		<i>destroyed</i>	
EPA-6	683.72	21.74	<i>not available (3)</i>	21.31	<i>not available (3)</i>	9.36	674.36
EPA-7	683.15	<i>inaccessible</i>		<i>inaccessible</i>		10.87	672.28
EPA-8	678.50	<i>inaccessible</i>		<i>inaccessible</i>		8.05	670.45
EPA-9	683.91	Dry	< 672.39	10.97	672.94	Dry	< 672.39
EPA-10	684.23	10.34	673.89	10.00	674.23	10.76	673.47
MW-1	680.05	9.26	670.79	9.05	671.00	9.80	670.25
MW-2	684.68	7.44	677.24	6.91	677.77	8.06	676.62
MW-3	685.75	8.78	676.97	<i>not measured (2)</i>		9.37	676.38
MW-3D	686.29	<i>not constructed</i>		9.69	676.60	10.57	675.72
MW-4	683.94	7.50	676.44	7.05	676.89	8.20	675.74
MW-4D	683.91	<i>not constructed</i>		8.46	675.45	9.51	674.40
MW-6	682.64	11.17	671.47	11.07	671.57	11.87	670.77
MW-6D	682.82	<i>not constructed</i>		11.52	671.30	12.29	670.53
MW-7	670.53	<i>not constructed</i>		3.91	666.62	4.77	665.76
MW-8	670.60	<i>not constructed</i>		5.26	665.34	5.86	664.74
MW-9	669.43	<i>not constructed</i>		<i>not constructed</i>		4.69	664.74
MW-9D	669.34	<i>not constructed</i>		<i>not constructed</i>		5.12	664.22
MW-10	666.91	<i>not constructed</i>		2.15	664.76	2.66	664.25
MW-11	667.23	<i>not constructed</i>		1.51	665.72	1.96	665.27
MW-12	670.05	<i>not constructed</i>		4.08	665.97	4.35	665.70
MW-13	664.03	<i>not constructed</i>		5.61	658.42	5.70	658.33
PZ-01	687.75	2.68	685.07	1.92	685.83	4.32	683.43
PZ-02	<i>not measured (4)</i>	<i>not constructed</i>		2.14	<i>not available (4)</i>	<i>destroyed</i>	
PZ-03	678.20	2.83	675.37	2.59	675.61	3.58	674.62
PZ-04	664.06	2.97	661.09	2.44	661.62	3.40	660.66
PZ-05	661.25	2.43	658.82	2.03	659.22	2.73	658.52
PZ-06	654.28	3.28	651.00	2.85	651.43	3.69	650.59
PZ-12	666.95	<i>not constructed</i>		2.52	664.43	2.87	664.08
PZ-13	657.20	<i>not constructed</i>		0.98	656.22	1.01	656.19
PZ-14	660.69	<i>not constructed</i>		<i>not constructed</i>		2.13	658.56

1) Surveyed by Guntlow & Associates, Inc. licensed surveyor

2) Not measured due to suspected potential for presence of non-aqueous phase liquid (NAPL).

3) Elevation not available due to change in top-of casing elevation between time of measurement and time of survey.

4) Elevation not available; location destroyed prior to survey.

Table 4
Piezometer Water Level Measurements
Former Jard Company Site
Bennington, Vermont

The Johnson Company

Event 1: 7/27/2010			
Location	Depth to Water in Piezometer (feet)	Depth to Water in Stream (feet)	Inferred Vertical Groundwater Flow Direction
PZ-01	2.74	2.59	↓
PZ-02	<i>not yet constructed</i>		
PZ-03	2.77	2.43	↓
PZ-04	2.90	3.00	↑
PZ-05	2.36	2.33	↓
PZ-06	3.21	2.83	↓
PZ-12	<i>not yet constructed</i>		
PZ-13	<i>not yet constructed</i>		
PZ-14	<i>not yet constructed</i>		

Event 2: 7/28/2010			
Location	Depth to Water in Piezometer (feet)	Depth to Water in Stream (feet)	Inferred Vertical Groundwater Flow Direction
PZ-01	2.64	2.74	↑
PZ-02	<i>not yet constructed</i>		
PZ-03	2.85	2.57	↓
PZ-04	3.02	3.12	↑
PZ-05	2.44	2.44	-
PZ-06	3.31	2.95	↓
PZ-12	<i>not yet constructed</i>		
PZ-13	<i>not yet constructed</i>		
PZ-14	<i>not yet constructed</i>		

Event 3: 7/29/2010			
Location	Depth to Water in Piezometer (feet)	Depth to Water in Stream (feet)	Inferred Vertical Groundwater Flow Direction
PZ-01	2.68	2.68	-
PZ-02	<i>not yet constructed</i>		
PZ-03	2.83	2.56	↓
PZ-04	2.97	3.05	↑
PZ-05	2.43	2.39	↓
PZ-06	3.28	2.91	↓
PZ-12	<i>not yet constructed</i>		
PZ-13	<i>not yet constructed</i>		
PZ-14	<i>not yet constructed</i>		

Event 4: 8/6/2010			
Location	Depth to Water in Piezometer (feet)	Depth to Water in Stream (feet)	Inferred Vertical Groundwater Flow Direction
PZ-01	1.92	2.02	↑
PZ-02	2.14	2.05	↓
PZ-03	2.59	2.24	↓
PZ-04	2.44	2.59	↑
PZ-05	2.03	2.92	↑
PZ-06	2.85	2.46	↓
PZ-12	2.52	2.78	↑
PZ-13	0.98	1.83	↑
PZ-14	<i>not yet constructed</i>		

Event 5: 8/30/2010			
Location	Depth to Water in Piezometer (feet)	Depth to Water in Stream (feet)	Inferred Vertical Groundwater Flow Direction
PZ-01	4.32	4.02	↓
PZ-02	<i>destroyed</i>		
PZ-03	3.58	2.82	↓
PZ-04	3.40	dry (> 3.47)	↑
PZ-05	2.73	dry (> 2.82)	↑
PZ-06	3.69	dry (> 3.15)	unknown
PZ-12	2.87	2.70	↓
PZ-13	1.01	1.64	↑
PZ-14	2.13	2.57	↑

Notes:
 ↑ Indicates discharge of groundwater to surface water.
 ↓ Indicates recharge of groundwater by surface water.

Table 5
Laboratory Results: Groundwater
Former Jard Company Site
Bennington, Vermont

The Johnson Company

Well	VGES	EPA-3	EPA-4	EPA-6	EPA-7	EPA-8	EPA-10
Date	µg/L	8/31/2010	8/31/2010	8/31/2010	8/31/2010	8/31/2010	9/1/2010
Aroclor 1016	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	0.7
Aroclor 1221	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1232	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1242	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1248	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1254	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1260	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
DEHP	6.0	ND < 5	ND < 5	ND < 5	ND < 5	ND < 5	ND < 5
Specific Gravity	-	Not analyzed	Not analyzed	0.9769	Not analyzed	Not analyzed	Not analyzed

Well	VGES	MW-1	MW-2	MW-3	MW-3D	MW-3D Field Duplicate	MW-4
Date	µg/L	9/1/2010	9/1/2010	9/2/2010	9/2/2010	9/2/2010	9/1/2010
Aroclor 1016	0.5	0.7	ND < 0.5	ND < 1,000	ND < 10	ND < 10	ND < 0.5
Aroclor 1221	0.5	ND < 0.5	ND < 0.5	ND < 1,000	ND < 10	ND < 10	ND < 0.5
Aroclor 1232	0.5	ND < 0.5	ND < 0.5	14,000	110	100	ND < 0.5
Aroclor 1242	0.5	ND < 0.5	ND < 0.5	ND < 1,000	ND < 10	ND < 10	ND < 0.5
Aroclor 1248	0.5	ND < 0.5	ND < 0.5	ND < 1,000	ND < 10	ND < 10	ND < 0.5
Aroclor 1254	0.5	ND < 0.5	ND < 0.5	ND < 1,000	ND < 10	ND < 10	ND < 0.5
Aroclor 1260	0.5	ND < 0.5	ND < 0.5	ND < 1,000	ND < 10	ND < 10	ND < 0.5
DEHP	6.0	ND < 5	ND < 5	450	70	71	ND < 5
Specific Gravity	-	Not analyzed	Not analyzed	0.9769	Not analyzed	Not analyzed	Not analyzed

- 1) All concentrations reported in parts per billion (µg/L).
- 2) ND = analyte not detected; reporting limit provided.
- 3) DEHP = bis(2-ethylhexyl)phthalate
- 4) PCB analysis performed by EPA Method 8082 with Soxhlet extraction.
- 5) DEHP analysis performed by EPA Method 8270D.
- 6) Bold = concentration exceeds Vermont Groundwater Enforcement Standards (VGES)

Table 5
Laboratory Results: Groundwater
Former Jard Company Site
Bennington, Vermont

The Johnson Company

Well	VGES	MW-4D	MW-6	MW-6 Field Duplicate	MW-6D	MW-7	MW-8
Date	µg/L	9/2/2010	9/1/2010	9/1/2010	9/1/2010	8/31/2010	9/1/2010
Aroclor 1016	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	2.3
Aroclor 1221	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1232	0.5	ND < 0.5	12	11	25	ND < 0.5	ND < 0.5
Aroclor 1242	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1248	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1254	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1260	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
DEHP	6.0	ND < 5	ND < 5	ND < 5	45	ND < 5	ND < 5
Specific Gravity	-	Not analyzed	Not analyzed	Not analyzed	Not analyzed	Not analyzed	Not analyzed

Well	VGES	MW-9	MW-9D	MW-10	MW-11	MW-12	MW-13
Date	µg/L	9/1/2010	9/1/2010	8/30/2010	8/30/2010	8/30/2010	8/30/2010
Aroclor 1016	0.5	5.9	ND < 1	1.6	ND < 0.5	40	ND < 0.5
Aroclor 1221	0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 5	ND < 0.5
Aroclor 1232	0.5	ND < 0.5	7	ND < 0.5	ND < 0.5	ND < 5	ND < 0.5
Aroclor 1242	0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 5	ND < 0.5
Aroclor 1248	0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 5	ND < 0.5
Aroclor 1254	0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 5	ND < 0.5
Aroclor 1260	0.5	ND < 0.5	ND < 1	ND < 0.5	ND < 0.5	ND < 5	ND < 0.5
DEHP	6.0	ND < 5	ND < 5	ND < 5	ND < 5	ND < 5	ND < 5
Specific Gravity	-	Not analyzed	Not analyzed	Not analyzed	Not analyzed	Not analyzed	Not analyzed

- 1) All concentrations reported in parts per billion (µg/L).
- 2) ND = analyte not detected; reporting limit provided.
- 3) DEHP = bis(2-ethylhexyl)phthalate
- 4) PCB analysis performed by EPA Method 8082 with Soxhlet extraction.
- 5) DEHP analysis performed by EPA Method 8270D.
- 6) Bold = concentration exceeds Vermont Groundwater Enforcement Standards (VGES)

Table 5
Laboratory Results: Groundwater
Former Jard Company Site
Bennington, Vermont

The Johnson Company

Well	VGES	PZ-04	PZ-05	PZ-06	PZ-13	PZ-14
Date	µg/L	8/31/2010	8/31/2010	8/31/2010	8/30/2010	8/30/2010
Aroclor 1016	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	0.7
Aroclor 1221	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1232	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1242	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1248	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1254	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
Aroclor 1260	0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5	ND < 0.5
DEHP	6.0	ND < 5	ND < 5	ND < 5	ND < 5	ND < 5
Specific Gravity	-	Not analyzed	Not analyzed	Not analyzed	Not analyzed	Not analyzed

Well	VGES	Greene Pipe	Greene Well	Greene	Watson
Date	µg/L	8/30/2010	8/30/2010	9/20/2010	9/20/2010
Aroclor 1016	0.5	1.7	1.3	ND < 0.3	1.8
Aroclor 1221	0.5	ND < 0.5	ND < 0.5	ND < 0.3	ND < 0.3
Aroclor 1232	0.5	ND < 0.5	ND < 0.5	ND < 0.3	ND < 0.3
Aroclor 1242	0.5	ND < 0.5	ND < 0.5	ND < 0.3	ND < 0.3
Aroclor 1248	0.5	ND < 0.5	ND < 0.5	ND < 0.3	ND < 0.3
Aroclor 1254	0.5	ND < 0.5	ND < 0.5	ND < 0.3	ND < 0.3
Aroclor 1260	0.5	ND < 0.5	ND < 0.5	ND < 0.3	ND < 0.3
DEHP	6.0	ND < 5	ND < 5	Not analyzed	Not analyzed
Specific Gravity	-	Not analyzed	Not analyzed	Not analyzed	Not analyzed

- 1) All concentrations reported in parts per billion (µg/L).
- 2) ND = analyte not detected; reporting limit provided.
- 3) DEHP = bis(2-ethylhexyl)phthalate
- 4) PCB analysis performed by EPA Method 8082 with Soxhlet extraction.
- 5) DEHP analysis performed by EPA Method 8270D.
- 6) Bold = concentration exceeds Vermont Groundwater Enforcement Standards (VGES)

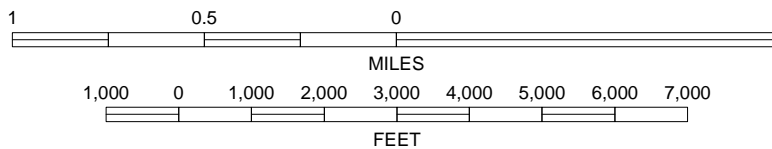
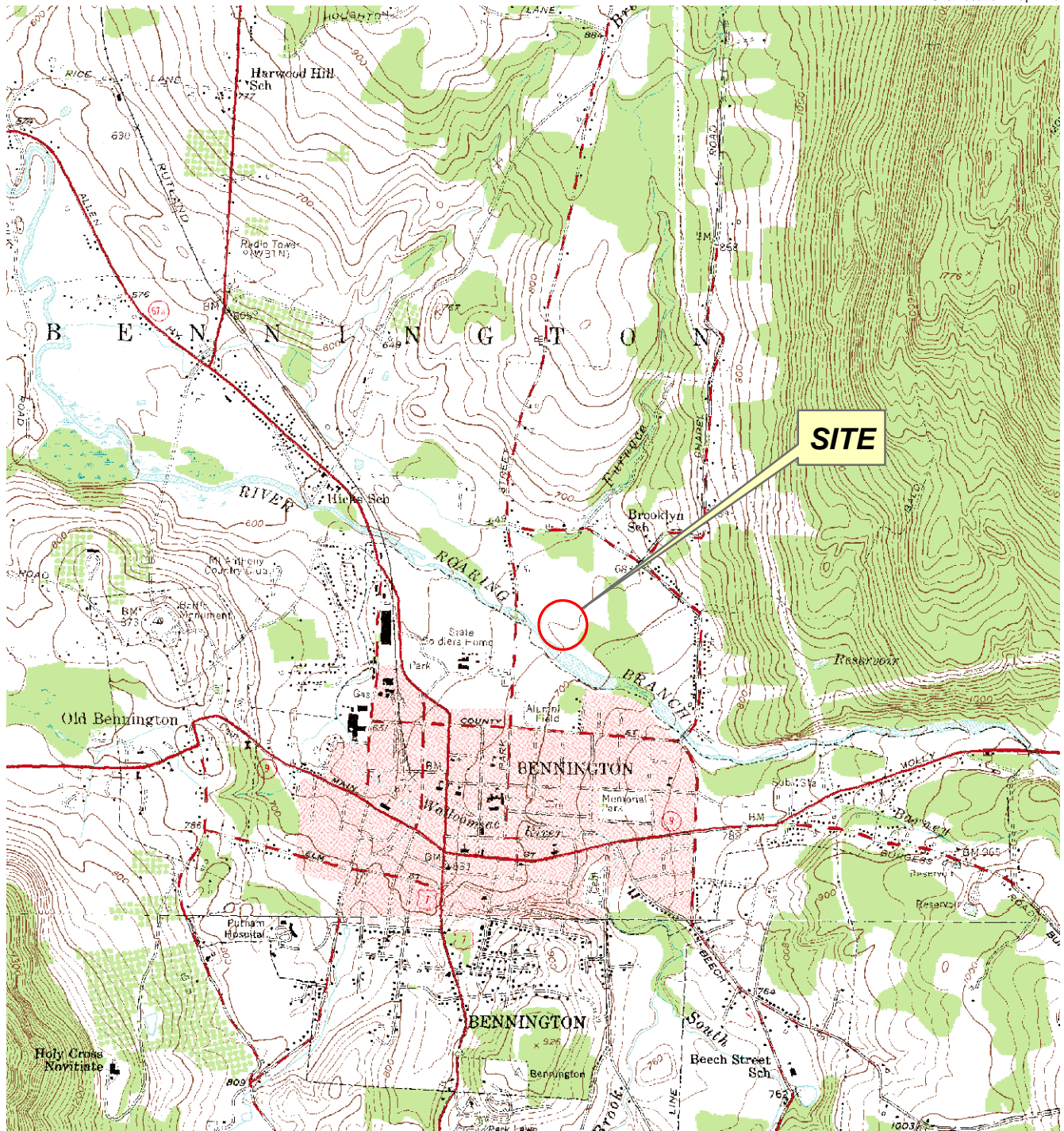
Table 6
Laboratory Results: PCB Congeners in MW-3
Former Jard Company Site
Bennington, Vermont

The Johnson Company

Congener IUPAC#	Initial Analysis		Diluted Analysis		Result	TEF	TEQ	TEQ
	Concentration (µg/L)	Qualifier	Concentration (µg/L)	Qualifier	(µg/L)	-	(µg/L)	(pg/L)
77	16.7	E	23.7		23.7	0.0001	2.37E-03	2370
81	0.791		0.978		0.791	0.0003	2.37E-04	237
105	10.8	BE	13.6	B	13.6	0.00003	4.08E-04	408
114	0.893		1.07		0.893	0.00003	2.68E-05	27
118	14.9	BE	19.5	B	19.5	0.00003	5.85E-04	585
123	0.640		0.699		0.640	0.00003	1.92E-05	19
126	0.0918		0.130	J	0.092	0.1	9.18E-03	9180
156 + 157	0.412		0.611		0.412	0.00003	1.24E-05	12
167	0.113		0.165	J	0.113	0.00003	3.39E-06	3
169	ND < 0.00185	U	ND < 0.00282	U	-	0.03	-	-
189	0.0110	J	0.0138	J	0.0110	0.00003	3.30E-07	0.3
Total (µg/L)					59.8	Total TEQ (pg/L)		12800
						2,3,7,8-TCDD VGES (pg/L)		30

- 1) Reported concentrations are in parts per billion (ug/L).
- 2) ND / U = Analyte not detected; detection limit provided.
- 3) B = Analyte detected in associated method blank.
- 4) E = Concentration exceeds upper calibration limit; estimated concentration provided.
- 5) J = Concentration below lower calibration limit; estimated concentration provided.
- 6) TEF = Toxic Equivalency Factor determined by World Health Organization (2005).
- 7) TEQ = 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) Toxic Equivalent (concentration * TEF)
- 8) VGES = Vermont Groundwater Enforcement Standard
- 9) PCB congeners identified according to International Union of Pure and Applied Chemistry numbering system.
- 10) PCB congeners 156 and 157 co-elute; combined concentration reported.

FIGURES



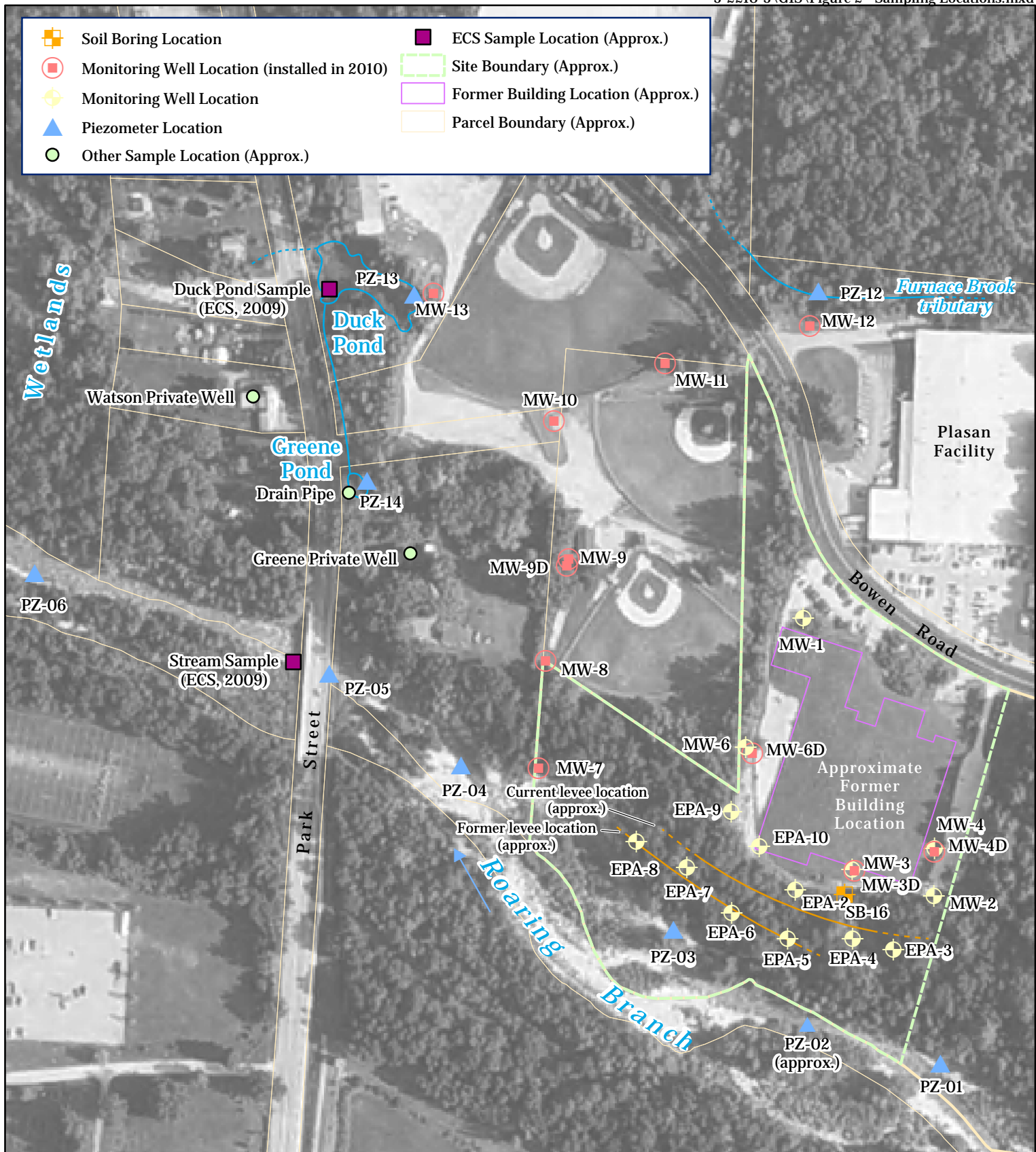
BASE MAP: USGS 7.5 Minute Topographic Triangles BENNINGTON 1995 & POWNAL 1995

FIGURE 1: SITE LOCATION MAP **JARD COMPANY SITE** **BENNINGTON, VERMONT**



100 State Street, Suite 600
 Montpelier, VT 05602

Drawn by: DPB Date: 4/28/10
 Chk'd by: Date:
 App'd by: Date:
 Scale: 1 inch = 1/2 mile Project: 3-2202-33



**Figure 2: Sampling Locations
Jard Company Site
Bennington, Vermont**



100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 10/07/10
Reviewed by: MBM Date: 12/02/10

Scale: 1" = 200' Project: 3-2218-3



0 100 200 400
Scale in Feet

Sources:

Parcel boundaries from Vermont Center for Geographic Information
Sampling locations from Johnson Company GPS survey, 8/30/2010, except where noted as approximate
ECS sampling locations from summary report dated 2/15/2010
Aerial photography from National Agricultural Imagery Program, 2009

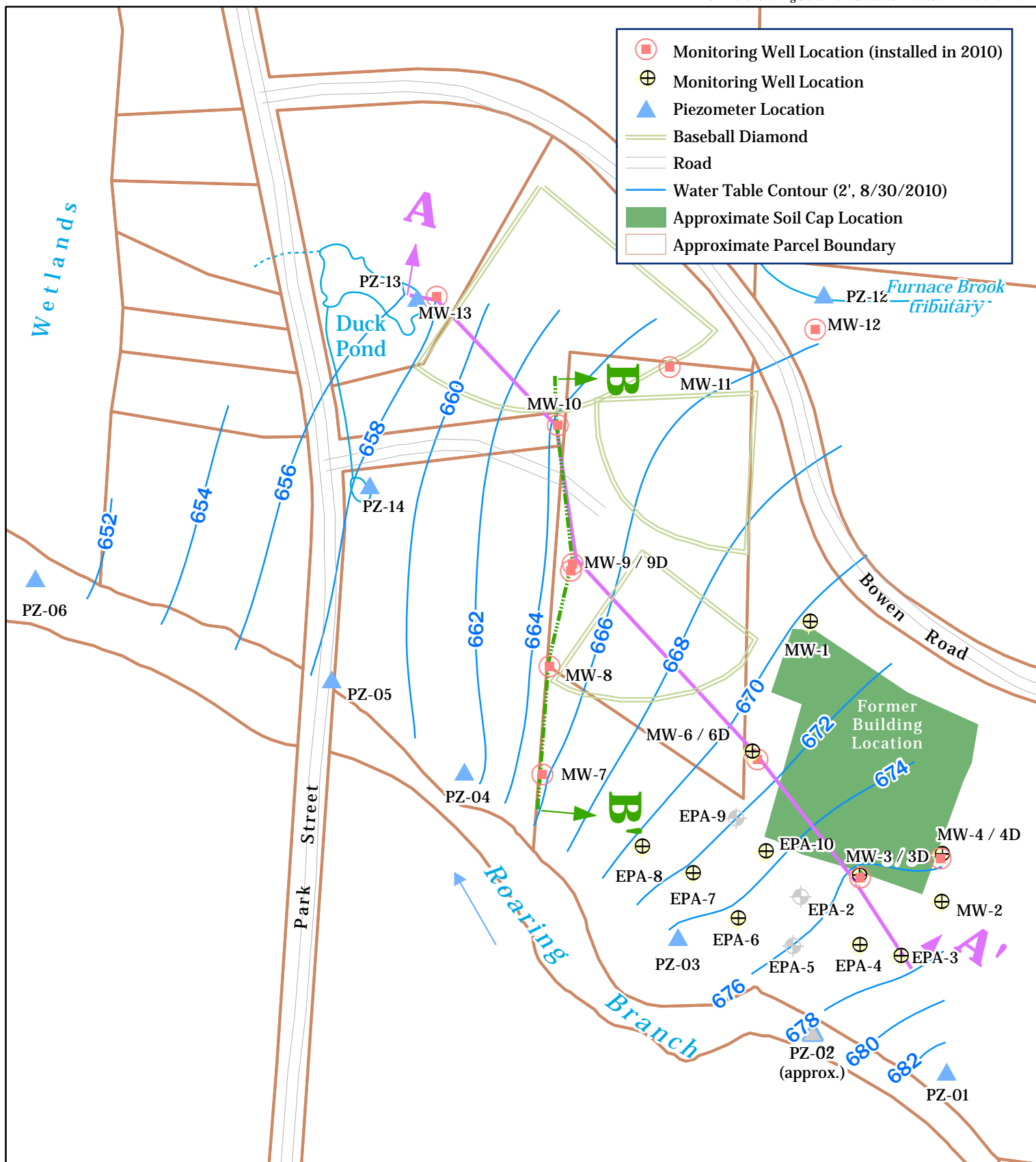


Figure 3a: Cross-Section Locations
Jard Company Site
Bennington, Vermont

100 State Street, Suite 600
Montpelier, VT 05602



Drawn by: RTK Date: 10/13/10
Reviewed by: MBM Date: 12/02/10

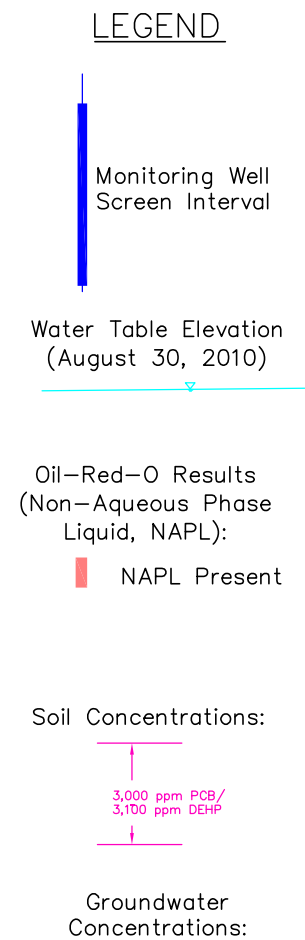
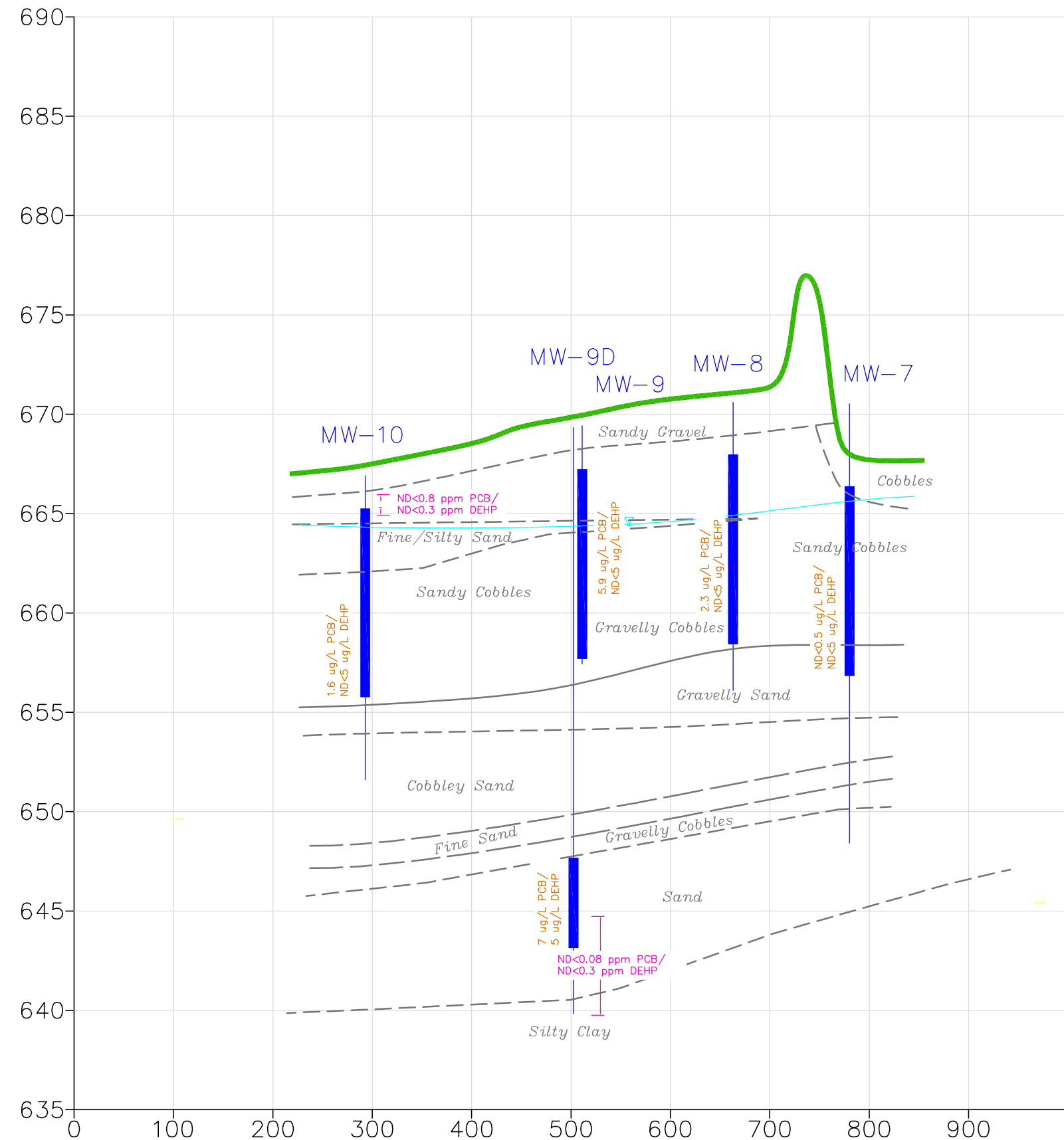
Scale: 1" = 200' Project: 3-2218-3



0 100 200 400
Scale in Feet

Sources:

Parcel boundaries from Vermont Center for Geographic Information
Sampling locations from Johnson Company GPS survey, 8/30/2010, except where noted as approximate
Aerial photography from National Agricultural Imagery Program, 2009



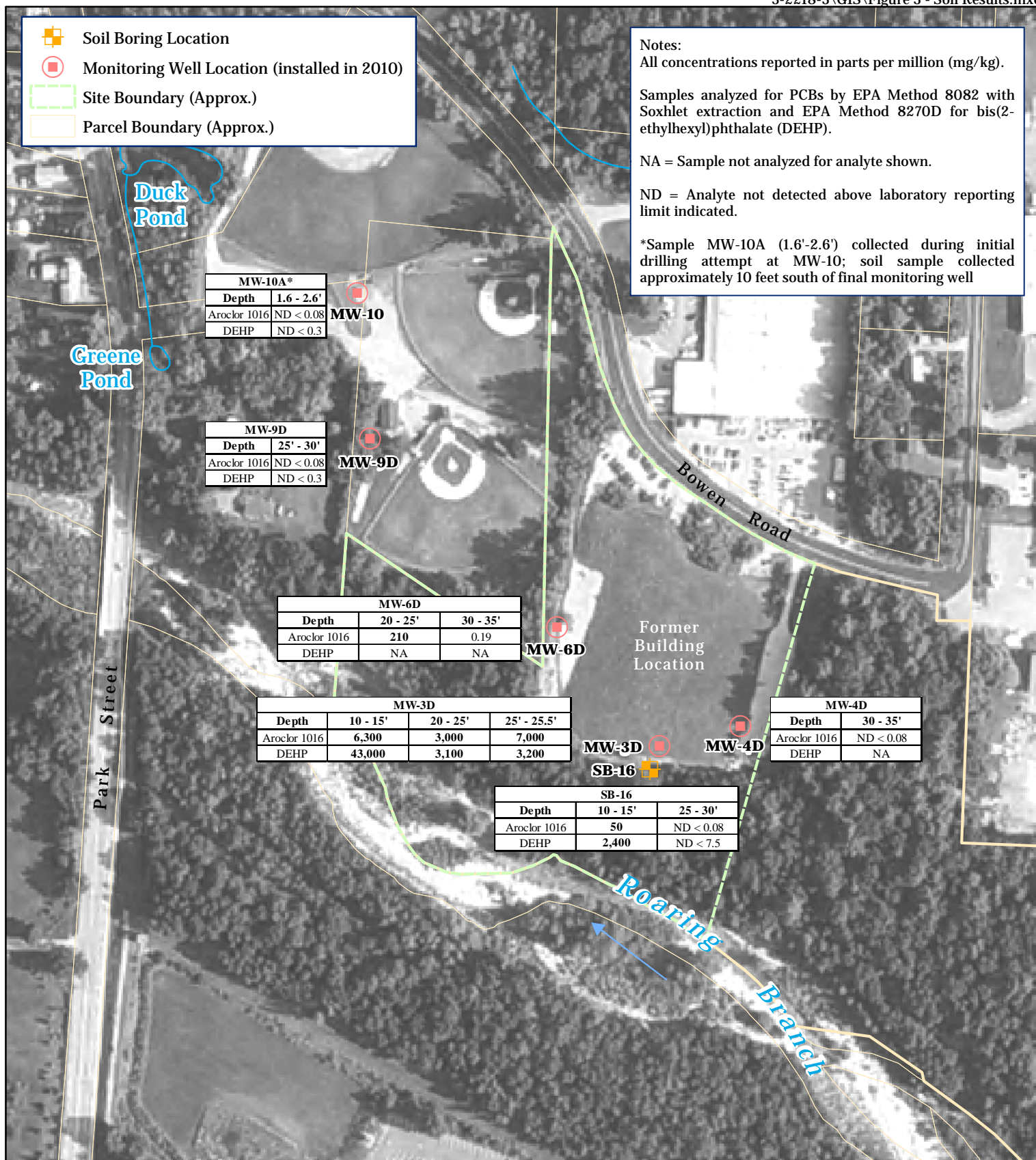


Figure 4: PCB and DEHP Concentrations in Soil (mg/kg)
 Jard Company Site
 Bennington, Vermont



100 State Street, Suite 600
 Montpelier, VT 05602

Drawn by: DPB Date: 10/07/10
 Reviewed by: MBM Date: 12/02/10

Scale: 1" = 200' Project: 3-2218-3



0 100 200 400

Scale in Feet

Sources:

Parcel boundaries from Vermont Center for Geographic Information
 Sampling locations from Johnson Company GPS survey, 8/30/2010, except where noted as approximate
 Aerial photography from National Agricultural Imagery Program, 2009



Figure 5: Water Table Potentiometric Map
August 6, 2010

Jard Company Site: Bennington, Vermont

100 State Street, Suite 600
Montpelier, VT 05602



Drawn by: DPB Date: 10/07/10
Reviewed by: MBM Date: 12/02/10

Scale: 1" = 200' Project: 3-2218-3



0 100 200 400
Scale in Feet

Sources:

Parcel boundaries from Vermont Center for Geographic Information
Sampling locations from Johnson Company GPS survey, 8/30/2010, except where noted as approximate
Aerial photography from National Agricultural Imagery Program, 2009



Figure 6: Water Table Potentiometric Map
August 30, 2010

Jard Company Site: Bennington, Vermont

100 State Street, Suite 600
Montpelier, VT 05602



Drawn by: DPB Date: 10/07/10
Reviewed by: MBM Date: 12/02/10

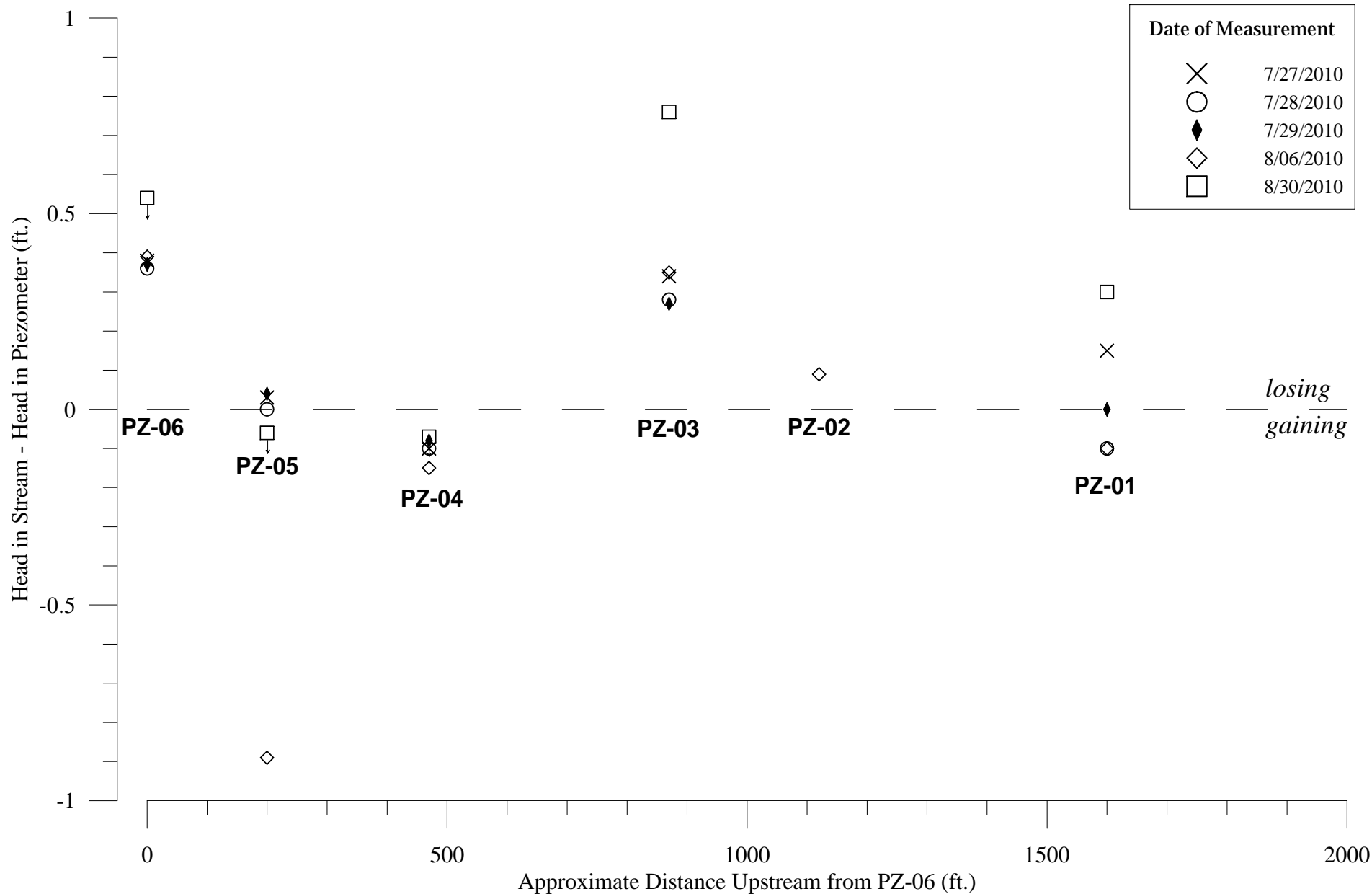
Scale: 1" = 200' Project: 3-2218-3



0 100 200 400
Scale in Feet

Sources:

Parcel boundaries from Vermont Center for Geographic Information
Sampling locations from Johnson Company GPS survey, 8/30/2010, except where noted as approximate
Aerial photography from National Agricultural Imagery Program, 2009



Note:

On August 30, 2010, the water level in the Roaring Branch had declined below the streambed at PZ-04, PZ-05, and PZ-06. Head differences shown are between the water level in the piezometer and the streambed; actual stream-piezometer head differences would be greater in PZ-04 and PZ-04, and lower in PZ-06.

Figure 7
Roaring Branch Piezometer Water Levels
Former Jard Company Site
Bennington, Vermont

100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 10/11/10
Reviewed by: MBM Date: 12/02/10

Scale: shown Project: 3-2218-3

The Johnson Company

DRAFT

Notes:

All concentrations reported in parts per billion (µg/L)

All samples analyzed by EPA Method 8082.

Concentrations indicated represent maximum reported concentration between duplicate samples.

ND = PCBs not detected above laboratory reporting limit.

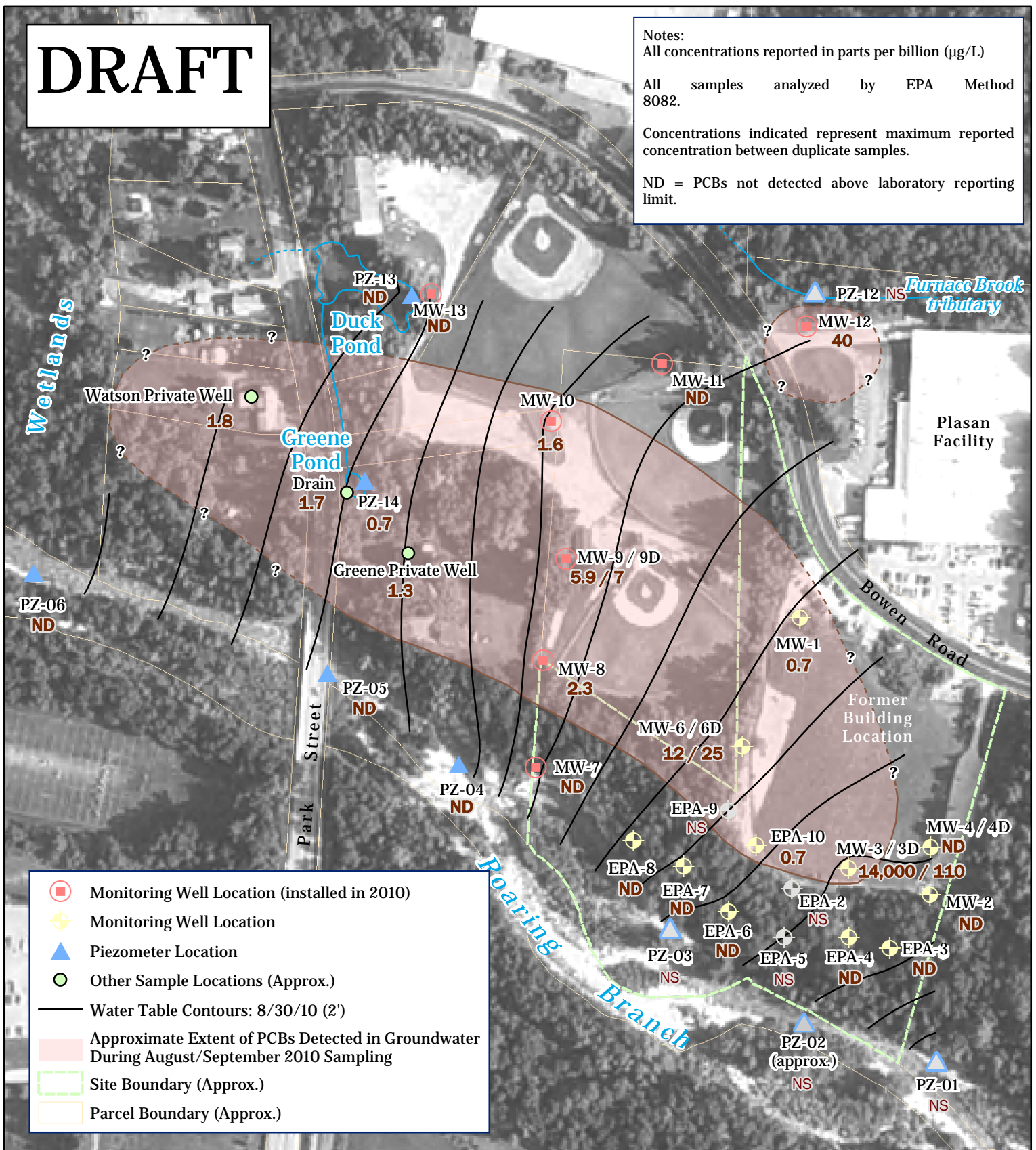


Figure 8: PCB Concentrations in Groundwater (µg/L)
August-September 2010

Jard Company Site: Bennington, Vermont



100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: DPB Date: 10/07/10

Reviewed by: MBM Date: 12/02/10

Scale: 1" = 200' Project: 3-2218-3

Sources:

Parcel boundaries from Vermont Center for Geographic Information
Sampling locations from Johnson Company GPS survey, 8/30/2010, except where noted as approximate
Aerial photography from National Agricultural Imagery Program, 2009

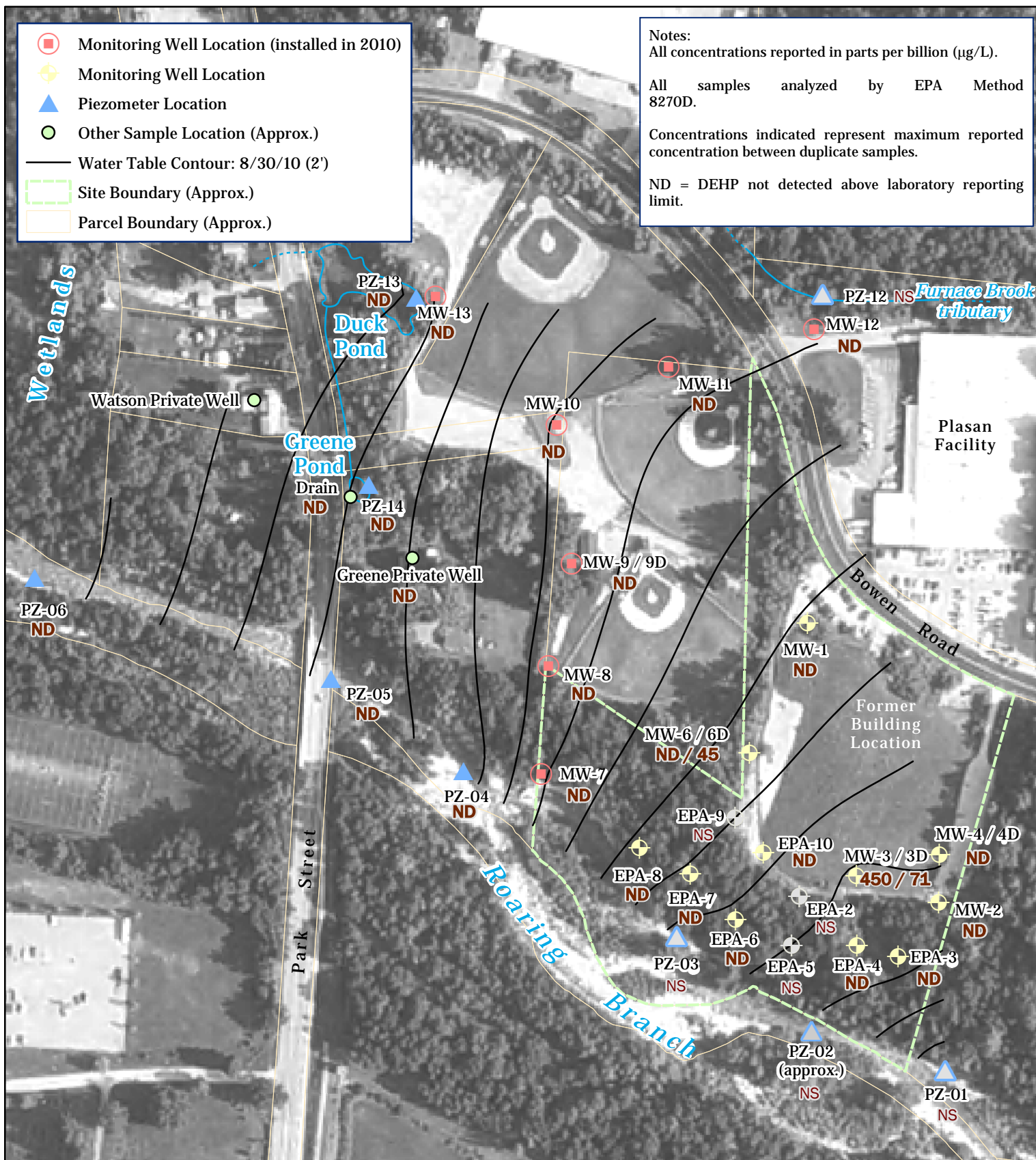


Figure 9: DEHP Concentrations in Groundwater (µg/L)
 August-September 2010
 Jard Company Site: Bennington, Vermont



100 State Street, Suite 600
 Montpelier, VT 05602

Drawn by: DPB Date: 10/08/10
 Reviewed by: MBM Date: 12/02/10

Scale: 1" = 200' Project: 3-2218-3



0 100 200 400
 Scale in Feet

Sources:

Parcel boundaries from Vermont Center for Geographic Information
 Sampling locations from Johnson Company GPS survey, 8/30/2010, except where noted as approximate
 Aerial photography from National Agricultural Imagery Program, 2009

APPENDIX A
PHOTOGRAPHS



**Photo #1. Small pond at edge of 403 Park Street property (Greene Pond).
Note two drainage pipes discharging into pond.**



Photo #2. Example hydrophobic dye tests from MW-3D. From left to right: 10-15 ft bgs, 15-20 ft bgs, 20-25 ft bgs, 25-30 ft bgs. Note presence of DNAPL globule in bottom of soil from 15-20 ft bgs.



Photo #3. Heavily stained soils recovered from 10 to 15 ft bgs in MW-3D.



Photo #4. Roaring Branch after a thunderstorm on August 5, 2010.

APPENDIX B

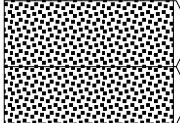

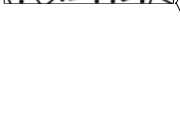
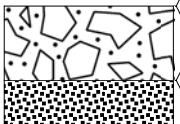
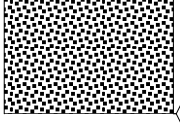
BOREHOLE LOGS



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

MW-10

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: 666.91

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00		Flushmount		Silty SAND, humid, somewhat cohesive, brown.
		2" PVC Casing		Gravelly SAND, sand is fine, gravel fine to medium. Humid.
		Cetco Bentonite Chips		Gravelly COBBLES, some fine to coarse sand, trace silt. Partly cohesive, wet.
5.00	1.3			No Recovery.
		Filpro Silica Filtration Sand		
		Screen		
10.00				COBBLES, rounded to angular, humid.
		Bottom Cap		Gravelly SAND, sand is medium to coarse, gravel is medium to coarse, rounded to angular. Wet.
	2.9			No Recovery.
		Filpro Silica Filtration Sand		
15.00				

Drilling Date: 08/05/10
Drilling Company: Boart Longyear
Drilling Method: Rotosonic

Easting (VT SPCS): 443540.062
Northing (VT SPCS): 43639.945

Construction Materials

Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"

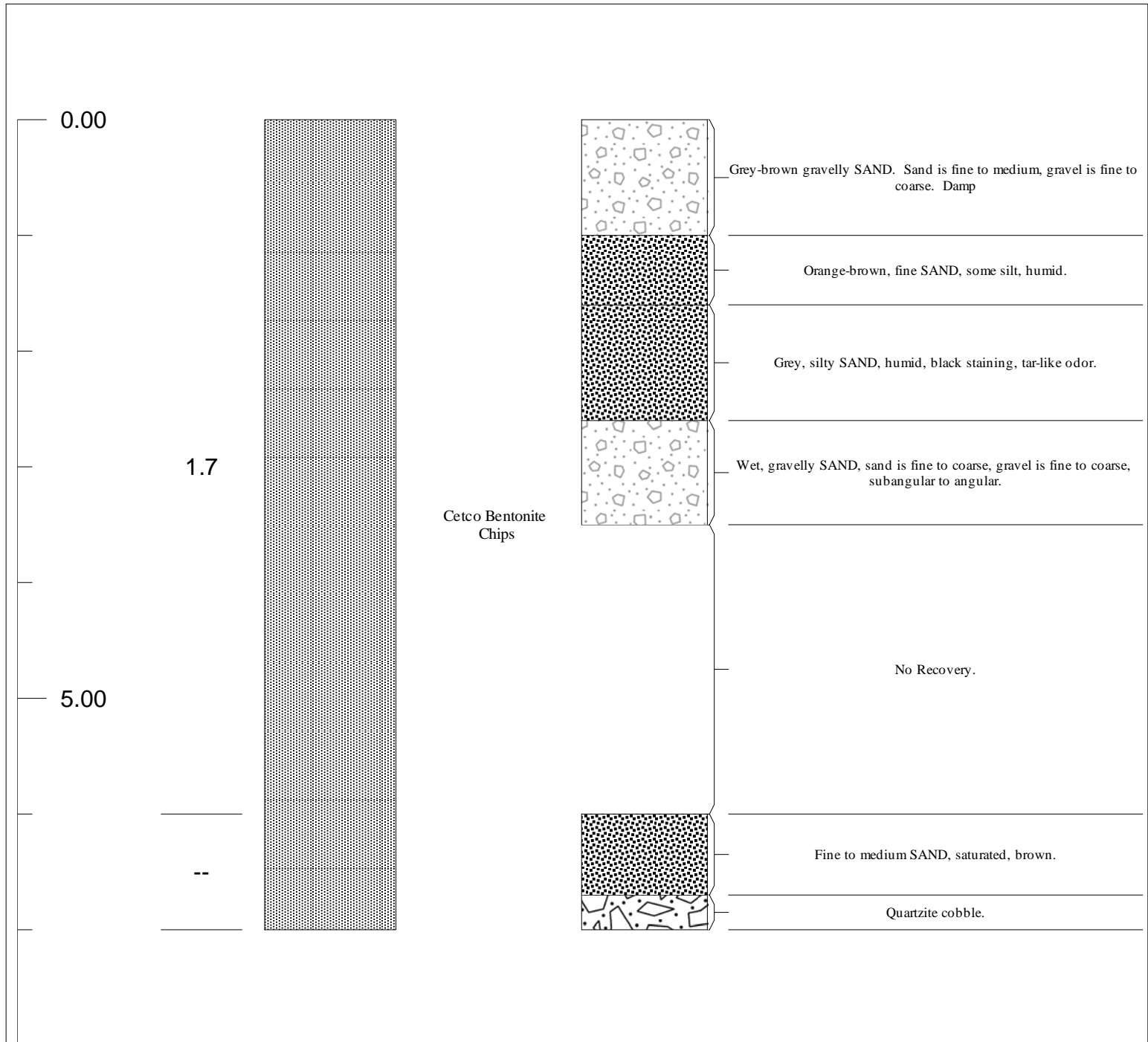


The Johnson Company, Inc.
100 State St. Suite 600
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(802) 229-4600

MW-10A

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: --

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
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Drilling Date: 08/05/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic
Easting (VT SPCS): --
Northing (VT SPCS): --

Construction Materials

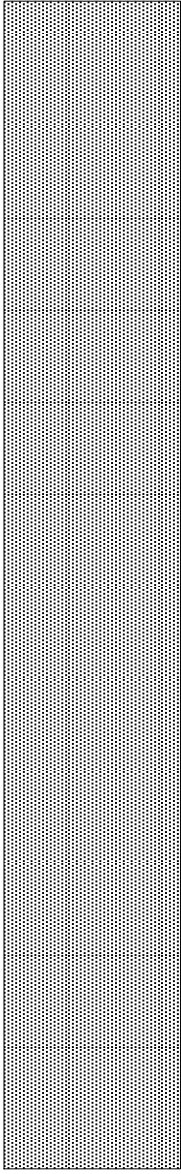
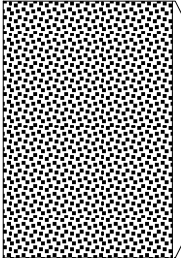
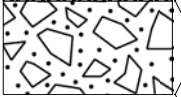
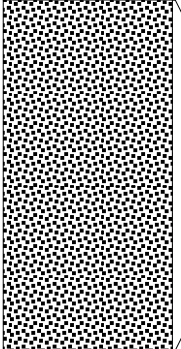
Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

MW-10B

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: --

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00				Silty SAND, some gravel. Wet, cohesive. Grey-brown from 0-1.6 fbs, black staining from 1.6-2.2 fbs. Tar odor from soil around staining.
	--			Gravelly COBBLES, damp. Cobbles are rounded to subangular. Some brown, fine to medium SAND, non-cohesive.
				No Recovery.
5.00				Fine to medium SAND, some gravel, single cobble. Wet, non-cohesive. Brown.
	--			No Recovery.
10.00				

Drilling Date: 08/05/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic
Easting (VT SPCS): --
Northing (VT SPCS): --

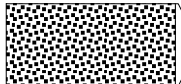
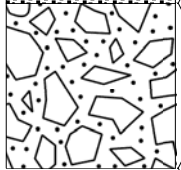
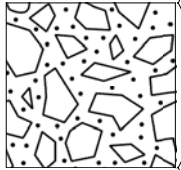
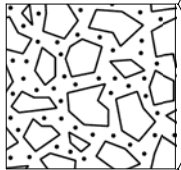
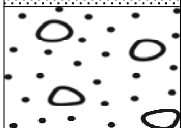
Construction Materials
Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

MW-11

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: 667.23

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00		Flushmount		Gravelly SAND, some silt, humid, dark brown, organic.
		2" PVC Casing		
		Cetco Bentonite Chips		COBBLES and silty sand, cobbles generally rounded, up to 0.4' in diameter. Silty sand is cohesive, very dark brown except red-orange from 1.3 to 1.5 fbs. Damp.
0.5				No Recovery.
5.00		Screen		COBBLES with gravelly sand. Cobbles are rounded, gravel is angular. Sand is very fine to coarse, well graded. Saturated.
		Filpro Silica Filtration Sand		No Recovery.
0.4				No Recovery.
10.00		Bottom Cap		Same as 5-7' bgs, except cobbles are subangular to angular.
		Filpro Silica Filtration Sand		No Recovery.
0.5				No Recovery.
15.00		Native Material Caving		

Drilling Date: 08/04/10
Drilling Company: Boart Longyear
Drilling Method: Rotosonic

Easting (VT SPCS): 443592.11
Northing (VT SPCS): 43666.868

Construction Materials

Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

MW-12

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: RVJ
TOC Elevation: 670.05

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00		Flushmount		Organic layer. Brown, dry, silty SAND. Vegetative debris.
		2" PVC Casing		
	--	Cetco Bentonite Chips		Brown, humid, fine to medium SAND, some silt. Little gravel is multicolored, subangular to rounded, fine to coarse. Firm. Vegetative debris (roots).
5.00				Brown, humid, medium to coarse SAND. Trace silt, some gravel. Gravel is same as above.
	0			Brown, humid, fine to medium SAND, some silt. Firm. Vegetative debris.
		Filpro Silica Filtration Sand Screen		Brown, wet, gravelly, coarse SAND. Gravel is fine to coarse, some cobbles (3-4" in diameter), rounded to subrounded and pink or brown. Non-sticky.
	NR			No Recovery.
10.00				Multicolored, wet, medium to coarse SAND. Some gravel is fine, multicolored and rounded to subrounded. Non-sticky.
	0			Brown, saturated, coarse sandy GRAVEL. Gravel is coarse to fine (one cobble, 5" diameter) rounded to subrounded, brown and pink.
		Bottom Cap		Moist, pink, massive rock fragments (core-wide, COBBLES), some coarse sand, fine gravel is also quartzite. Non-coherent.
	NR	Filpro Silica Filtration Sand		No Recovery.
15.00				

Drilling Date: 07/30/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic

Easting (VT SPCS): 443659.741
Northing (VT SPCS): 43684.324

Construction Materials

Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

MW-13

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: 664.03

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00		Flushmount		Organic layer, SAND, black, damp.
		Filpro Silica Filtation Sand		Dark brown, gravelly SAND, wet, some silt, cohesive.
1.3				Sandy COBBLES, sand is dark brown, fine to medium. Cobbles rounded to subangular. Possible fill.
		Cetco Bentonite Chips		No Recovery.
5.00		2" PVC Casing		Gravelly SAND, dark brown, saturated, fine to medium, trace silt, some cobbles are ~0.2' in diameter.
				Same as above, only humid.
	0.7			No Recovery.
10.00		Filpro Silica Filtation Sand		Dark brown, fine to medium SAND, trace coarse sand and fine gravel, wet.
		Screen		Sandy GRAVEL, gravel is fine to coarse, sand is fine to coarse.
	1.1			Saturated COBBLES, rock fragments. Some gravel.
				No Recovery.
15.00				No Recovery.
	NR			No Recovery.
20.00		Bottom Cap Filpro Silica Filtation Sand Native Material Caving		

Drilling Date: 08/03/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic

Easting (VT SPCS): 443483.805
Northing (VT SPCS): 43699.515

Construction Materials

Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

MW-3D

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: 686.29

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00	0	Stickup		Dry, brown, fine SAND, trace gravel, probable fill.
	0			Dry, grey-brown SAND with rock fragments (up to 0.3 ft).
0.5				COBBLES, rounded to subrounded, dry, slight tar-like odor.
5.00	NR	Volclay High Solids Grout		No Recovery.
	0.8			COBBLES, rounded to subangular, dry, light coating of black tar-like substance, tar odor.
	3.1			Dry, brown, gravelly SAND, thick black tar substance, strong odor.
	4.2			Dry to moist COBBLES with sand, grey tar-like substance.
10.00	NR	2" PVC Casing		No Recovery.
	4.8			COBBLES with sand, coated in tar that is black at top of run, becoming dark grey at bottom.
15.00	NR			No Recovery.
	5.2	Cetco Bentonite Chips		Gravelly COBBLES, wet, cobbles are rounded to subangular, gravel is fine to coarse, subangular to angular. Upper two feet covered in greyish tar, bottom 1.3 has no discernable tar.
20.00	NR			No Recovery.
	0.4			Wet, grey SAND, fine to medium grading downwards to medium to coarse.
		Filpro Silica Filtration Sand Screen		COBBLES, subangular, some gravel.
25.00	NR			No Recovery.
	1			Saturated, brown, fine to medium sand, noncohesive.
		Bottom Cap Filpro Silica Filtration Sand		COBBLES with coarse sand and gravel, cobbles and gravel are subangular. Humid.
30.00	NR			No Recovery.
		Native Material Caving		

Drilling Date: 08/02/10
Drilling Company: Boart Longyear
Drilling Method: Rotosonic

Easting (VT SPCS): 443680.58
Northing (VT SPCS): 43429.918

Construction Materials

Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

MW-4D

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: RVJ
TOC Elevation: 683.91

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00	1	Stickup		
0.8		Cetco Bentonite Chips		Humid, brown, medium SAND, some fine sand, little silt. Very friable. Humid, brown fine-to-medium SAND, some gravel. Gravel is fine-to-coarse, subangular, light brown to pink. Noncohesive. Possible fill.
5.00	1.4			Massive ROCK. Pink, visible white crystals with some structure. Grains visible, sandstone. Possible quartzite.
	1.5			Wet, pink, fine gravel to coarse SAND-sized particles. Some coarse gravel-sized particles. Rock crushed by drilling action, angular pieces.
10.00		2" PVC Casing		Massive ROCK fragments. Pink, visible grains and white crystalline fragments. Pulverized rock. Scratches steel, possible quartzite.
		Volclay High Solids Grout		Massive ROCK fragments with some coarse sand, trace coarse gravel. Angular, same material as rock. Saturated.
15.00	0.4			Massive ROCK fragments (as wide as core barrel, 4"). Some brown, sticky fine sand / silt-sized material. Non-sticky, except for fine sand/silt patches.
				Brown, saturated FINE SAND / silt-sized material. Some fine gravel-sized material, multicolored (white, pink, brown). Possible slough.
20.00				Brown, wet, fine-to-coarse SAND with some gravel. Gravel is coarse-to-fine, white and pink with texture, subrounded. Non-cohesive.
				Brown, oversaturated, fine-to-coarse SAND, little gravel. Gravel is fine to coarse, angular to subangular, and pink to white.
				Massive ROCK fragments. White. Visible grains.
				No Recovery.
25.00	0.8	Cetco Bentonite Chips		Wet, multicolored, gravelly coarse SAND. Gravel is fine to coarse, multicolored, angular to subrounded. Non-sticky.
				No Recovery.
				Moist, multicolored, coarse SAND. Well-sorted, noncohesive.
30.00	NR	Filpro Silica Filtration Sand		Moist, multicolored, gravelly coarse SAND. Gravel is fine to cobble-sized (4") and rounded to subangular. Noncohesive.
		Screen		No Recovery.
		Bottom Cap		
35.00	0.4	Filtration Sand		Wet, multicolored GRAVEL. Gravel is coarse to fine, angular to subangular. Non-sticky.
		Cetco Bentonite Chips		SAA but with little medium to fine sand-sized material. Brown, non-sticky.
		Native Material		Light grey, fine sandy SILT. Wet, sticky.
		Caving		Grey, wet clayey SILT, little fine sand. Firm, very plastic.
				Grey, humid CLAY, little silt, very firm. Forms very durable, very thin wire (< 2 mm)

Drilling Date: 07/28/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic

Easting (VT SPCS): 443718.051
Northing (VT SPCS): 43438.909

Construction Materials

Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

MW-6D

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: RVJ
TOC Elevation: 682.82

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00				
1.3				
5.00				
NR				
10.00				
15.00				
NR				
20.00				
0.8				
0.3				
NR				
25.00				
0				
NR				
30.00				
0.3				
35.00				

Stickup

Cetco Bentonite
Chips

2" PVC Casing

Volclay High
Solids Grout

Cetco Bentonite
Chips

Filpro Silica
Filtration Sand
Screen

Bottom Cap
Filpro Silica
Filtration Sand

Cetco Bentonite
Chips

Brown, humid, gravelly SAND, little silt. Sand is coarse to fine, gravel is fine to coarse, pink to white, and angular to subrounded. Friable. Little root matter. Possible fill.

Brown, humid, sandy GRAVEL, little silt. Gravel is fine to coarse, few cobbles (3" - 5"). Friable.

Dark brown, humid, fine SAND. Some silt, few gravel is SAA, but fine-to-medium.

Dry, light brown, coarse sandy GRAVEL. Gravel is SAA, rounded, loose.

Massive, core-wide chunks of ROCK. White, some red coloration. Individual grains visible, scratches steel. Probable ROCK.

No Recovery.

Same as 5 to 6.5' bgs.

Wet, brown, gravelly fine SAND, little silt. Highly disturbed. Gravel is fine-to-coarse, white and angular to subangular. Slightly sticky.

Light brown, humid, gravelly fine SAND. Gravel is fine to coarse, one 3" cobble and multicolored (white, pink, brown) firm pellets.

SAA but dry. Loose.

SAA but moist. Non-coherent.

SAA but with massive, core-wide rock instead of gravel. Slightly sticky

No Recovery.

Saturated, medium to coarse SAND, trace fine sand, multicolored.

Non-sticky.

Brown, wet, gravelly coarse SAND, trace fine sand. Gravel is white or pink, fine to coarse (few cobbles, 3-4") and subrounded to angular.

Non-sticky.

Brown, saturated, gravelly fine to medium SAND. Gravel is coarse, rounded and multicolored, some cobbles (4"). Sticky.

Brown, wet, gravelly coarse SAND. Gravel is white or pink, fine to coarse (few cobbles, 3-4") and subrounded to angular. Non-sticky.

Saturated, multicolored, gravelly coarse SAND. Gravel is medium to coarse, angular to subrounded and quartzite. Non-sticky.

No Recovery.

Brown, wet, gravelly medium to coarse SAND. Little cobbles (2 - 4"), gravel is rounded to subrounded, ROCK. Non-sticky.

Multicolored, saturated, coarse sandy GRAVEL. Gravel is fine to medium, rounded to subangular and multicolored. Non-sticky.

Saturated, massive ROCK fragments, 5-6" long, core-wide. ROCK, pink and white. Some coarse sand-sized material.

No Recovery.

Moist, multicolored, medium to coarse SAND. Non-coherent.

Wet, multicolored, gravelly, coarse SAND. Gravel is fine to coarse, mostly fine, subangular and multicolored. Non-sticky.

Wet, brown, silty, coarse SAND, little gravel. Gravel is fine, white, subangular to subrounded. Varies from slightly sticky to plastic.

Humid, light brown, silty CLAY. Very firm. Forms a thin (<3 mm), slightly durable wire.

Drilling Date: 07/29/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic

Easting (VT SPCS): 443632.899
Northing (VT SPCS): 43484.915

Construction Materials

Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"

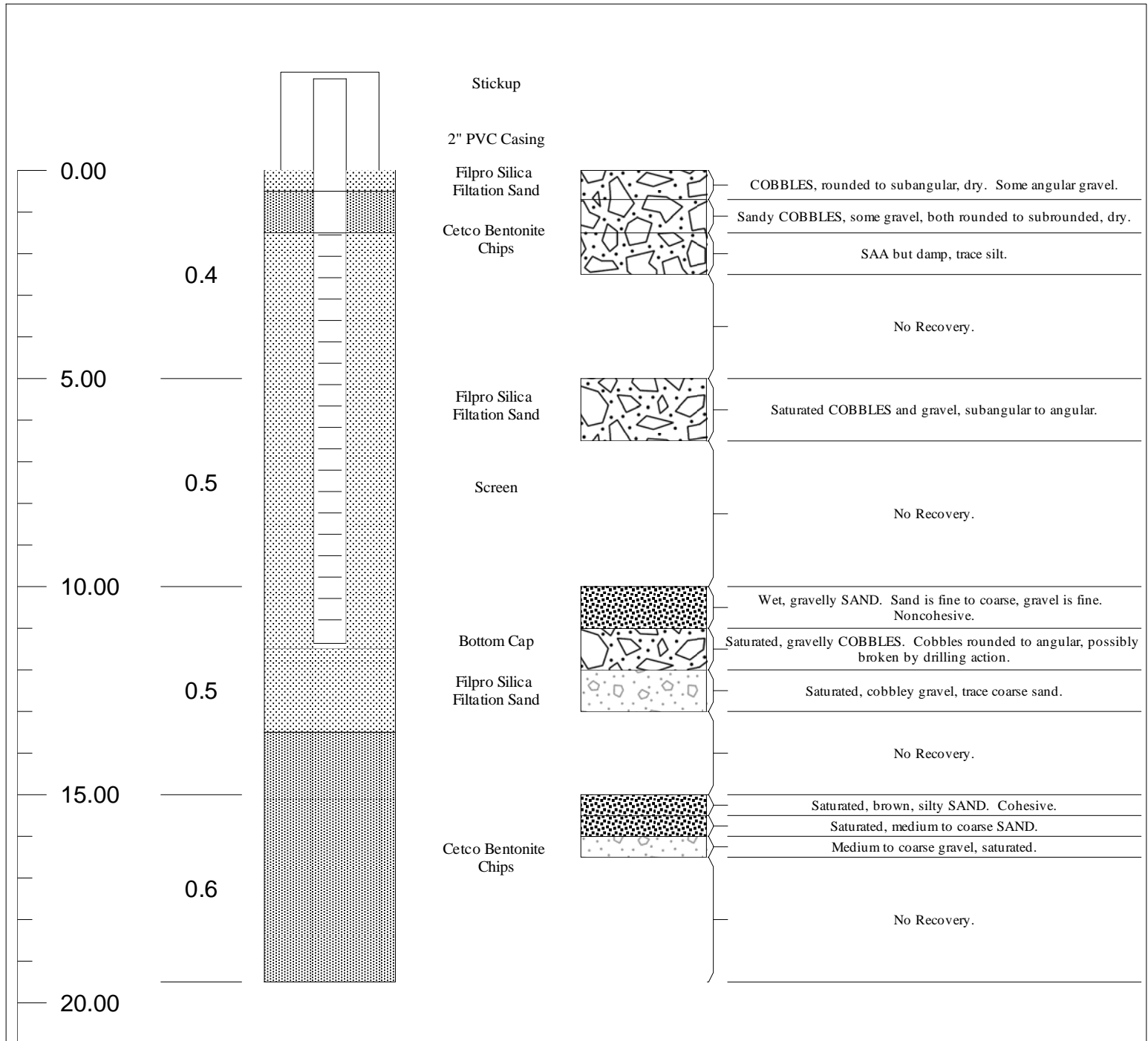


The Johnson Company, Inc.
 100 State St. Suite 600
 Montpelier, VT 05602
 (802) 229-4600

MW-7

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: 670.53

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
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Drilling Date: 08/03/10
Drilling Company: Boart Longyear
Drilling Method: Rotosonic
Easting (VT SPCS): 443532.846
Northing (VT SPCS): 43477.902

Construction Materials

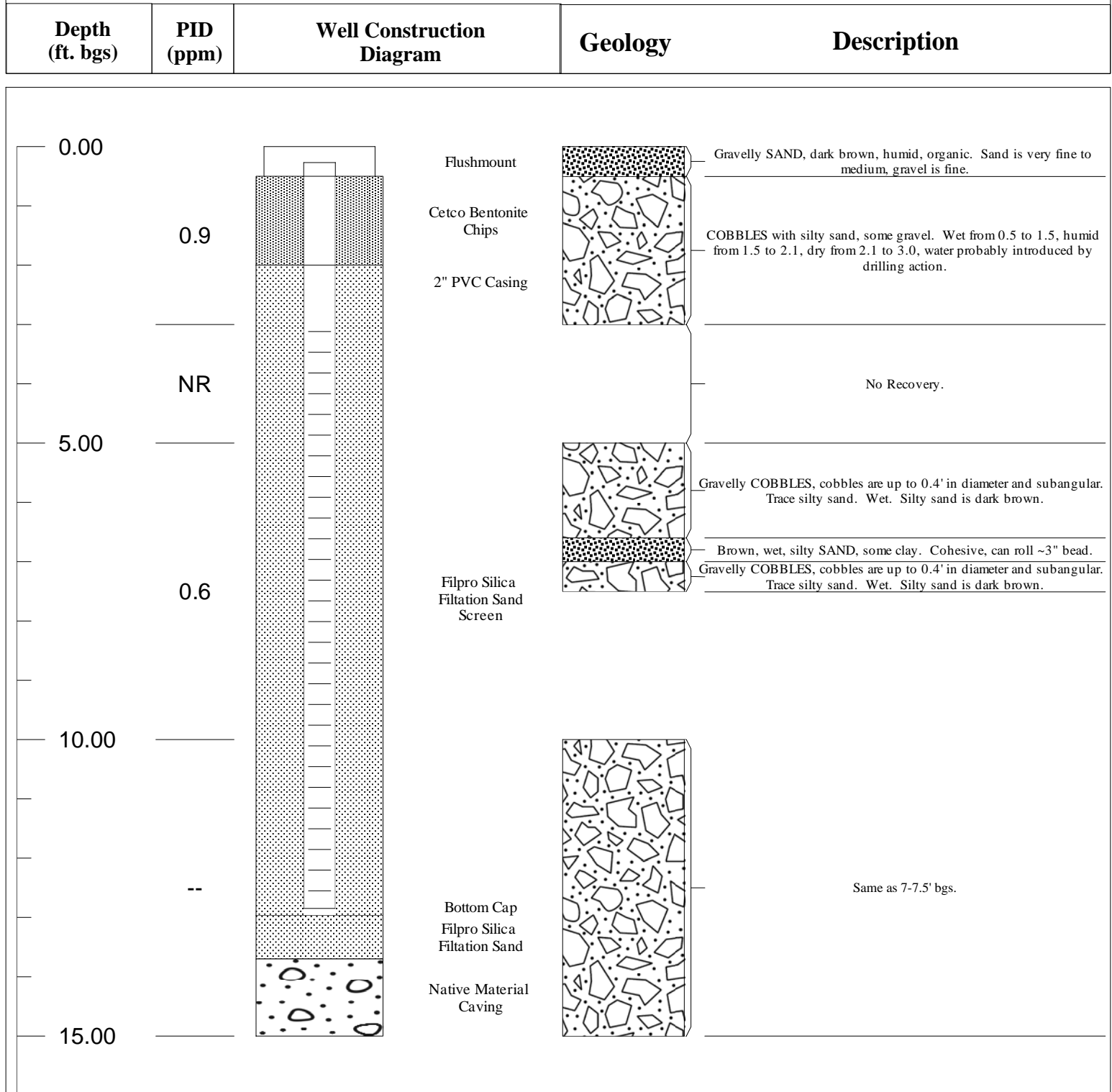
Casing: Schedule 40 PVC
 Screen: PVC with 0.010 slot
 Filter Pack: #0 Filter Sand
 Seal: Bentonite
 Surface Completion: --
 Riser Pipe and Screen Diameter: 2.0"



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(802) 229-4600

MW-8

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: 670.6



Drilling Date: 08/04/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic
Easting (VT SPCS): 443536.282
Northing (VT SPCS): 43527.902

Construction Materials

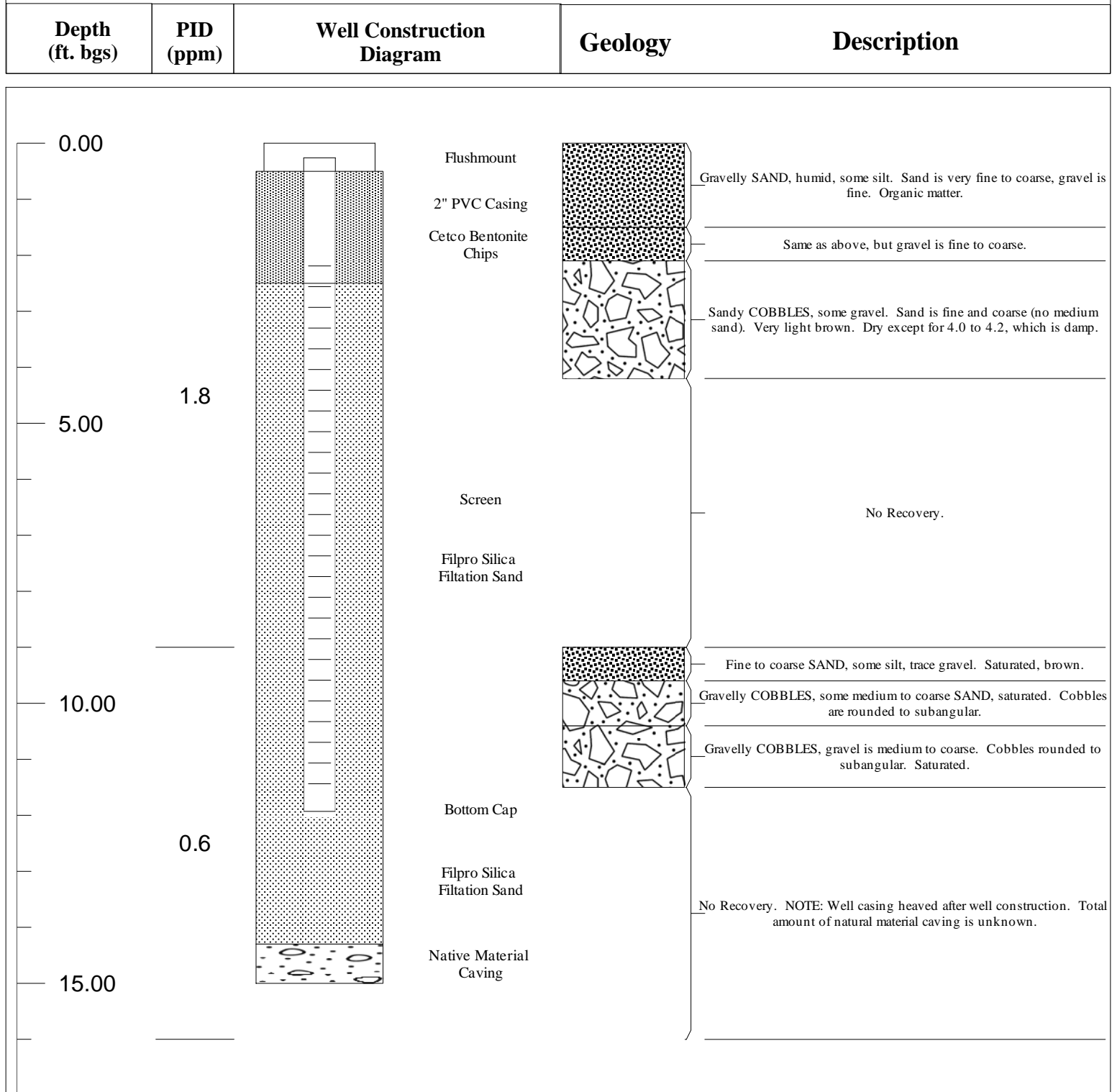
Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
 100 State St. Suite 600
 Montpelier, VT 05602
 (802) 229-4600

MW-9

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: 669.43



Drilling Date: 08/04/10
Drilling Company: Boart Longyear
Drilling Method: Rotosonic
Easting (VT SPCS): 443546.995
Northing (VT SPCS): 43575.526

Construction Materials
 Casing: Schedule 40 PVC
 Screen: PVC with 0.010 slot
 Filter Pack: #0 Filter Sand
 Seal: Bentonite
 Surface Completion: --
 Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
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(802) 229-4600

MW-9D

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: 669.34

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00		Flushmount		Gravelly SAND, some silt, humid, dark brown, organic. Very fine SAND, some silt, humid, red-orange. Same as above, but very light brown. COBBLES with silty sand, damp, silty sand is very dark brown. Tree roots. Gravelly COBBLES, damp, some fine to medium sand, trace silt. Cobbles are rounded to subangular.
5.00	0.7			No Recovery.
10.00		Cetco Bentonite Chips		
		2" PVC Casing		COBBLES with gravel and sand, wet. Sand is fine to coarse, gravel is fine to coarse. Cobbles and gravel are subangular to angular. Same as above, but lacking fine to medium gravel.
15.00	0.5			No Recovery.
				Gravelly SAND, light brown sand is fine to coarse, gravel is fine. Wet, noncohesive. Sandy GRAVEL, gravel is coarse, sand is fine to coarse. Wet, gravel is rounded to subangular. Cobbly SAND, some gravel. Sand is fine to coarse. Brown cobbles are generally rounded, some angular, subangular. Wet.
20.00	0			No Recovery.
		Filpro Silica Filtration Sand		Fine SAND, some medium sand and silt, saturated, brown. Gravelly COBBLES, some coarse sand, wet. Cobbles are rounded to subangular, gravel subangular to angular. Fine to coarse SAND, some fine gravel, fine to medium sand is brown. Gravel is subangular, wet.
25.00	0.1	Screen		Fine to medium SAND, few cobbles. Sand is brown. Cobbles rounded. Wet, noncohesive.
				No Recovery.
30.00	0.5	Bottom Cap Filpro Silica Filtration Sand Cetco Bentonite Chips		Brown sand, fine to medium at top, increasing coarse sand with depth, becomes medium to coarse. Wet, noncohesive. Gravel, fine to coarse, rounded to angular, wet. Grey-brown silty CLAY, trace fine sand, gravel. Humid, hard. Durability increasing with depth. Cannot roll 1/2" bead at 29.2 fbg, but can roll <1/8" bead at 30.0 fbg.

Drilling Date: 08/05/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic

Easting (VT SPCS): 443546.058
Northing (VT SPCS): 43572.481

Construction Materials

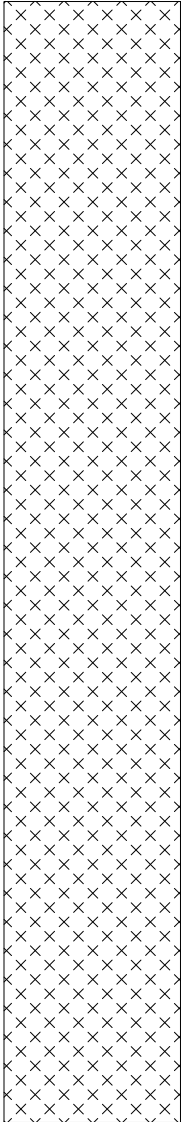
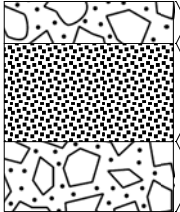

Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

SB-15

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: --

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00				COBBLES, subangular, dry.
				Brown, silty SAND, wet, little gravel, cohesive.
				Gravelly COBBLES, saturated, cobbles subangular, gravel subangular to angular. Some silty sand, brown, cohesive.
	--			No Recovery.
5.00				Gravelly COBBLES, wet.

Drilling Date: 08/06/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic

Easting (VT SPCS): 443676.855
Northing (VT SPCS): 43421.259

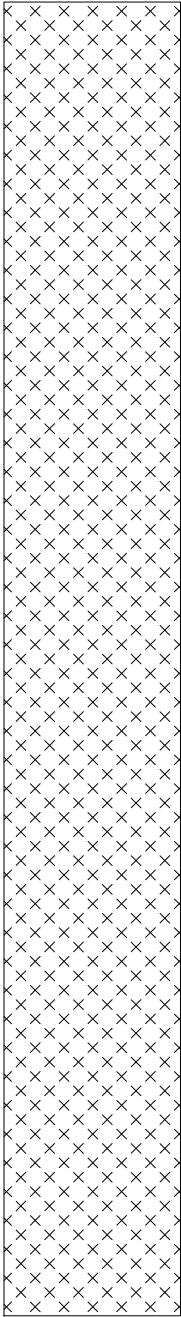
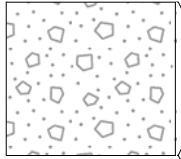
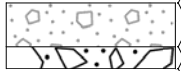


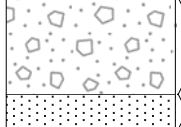
Construction Materials
Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"



The Johnson Company, Inc.
100 State St. Suite 600
Montpelier, VT 05602
(802) 229-4600

SB-16

Project: JARD Site
Location: Bennington, VT
Job #: 3-2218-3
Geologist: DPB
TOC Elevation: --

Depth (ft. bgs)	PID (ppm)	Well Construction Diagram	Geology	Description
0.00	--			Sandy GRAVEL, some cobbles. Sand is fine to medium, gravel is fine to coarse. Blackish tar-like substance from 1.7-3.5 fbg. Mild tar-like odor.
5.00	--			No Recovery.
10.00	--			Gravelly SAND, wet. Sand is brown-grey, fine to coarse. Gravel is fine and angular. Gravelly COBBLES, some sand, wet. Cobbles are angular.
15.00	--			Sandy COBBLES, wet, some gravel. Sand is fine to coarse.
20.00	--			Cobbly SAND, sand is medium to coarse. Some gravel, wet. Cobbles and gravel are rounded to angular.
25.00	--			Gravelly SAND, some cobbles. Sand is medium to coarse, cobbles are rounded to subangular. Wet. Clayey SILT, humid, poor durability (beads to 3/8" only). Grey.
30.00	--			No Recovery.

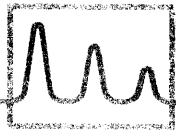
Drilling Date: 08/06/10
Drilling Company: Boart Longyear
Drilling Method: Rotasonic
Easting (VT SPCS): 443676.149
Northing (VT SPCS): 43418.958

Construction Materials

Casing: Schedule 40 PVC
Screen: PVC with 0.010 slot
Filter Pack: #0 Filter Sand
Seal: Bentonite
Surface Completion: --
Riser Pipe and Screen Diameter: 2.0"

APPENDIX C

LABORATORY REPORTS



eastern analytical, inc.
professional laboratory services

Daniel Baston
The Johnson Company
100 State Street
Montpelier, VT 05602



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 91440

Client Identification: JARD | 3-2218-3

Date Received: 8/2/2010

Report revision/reissue: Revision, replaces report dated 8/6/2010

Revision information: ABN report revised

Dear Mr. Baston:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted

< : "less than" followed by the reporting limit

> : "greater than" followed by the reporting limit

%R : % Recovery

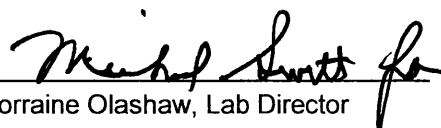
Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,


Lorraine Olashaw, Lab Director

8/9/10
Date

8
of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

Eastern Analytical, Inc. ID#: 91440

Client: The Johnson Company

Client Designation: JARD | 3-2218-3

Temperature upon receipt (°C): 3

Received on ice or cold packs (Yes/No): Y

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
91440.01	MW-4D (30-35')	8/2/10	7/28/10	soil	81.9	Adheres to Sample Acceptance Policy
91440.02	MW-6D (20-25')	8/2/10	7/29/10	soil	83.1	Adheres to Sample Acceptance Policy
91440.03	MW-6D (30-35')	8/2/10	7/29/10	soil	79.3	Adheres to Sample Acceptance Policy
91440.04	WT-01	8/2/10	7/29/10	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 2nd edition, 1992



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 91440

Client: The Johnson Company

Client Designation: JARD | 3-2218-3

Sample ID: WT-01

Lab Sample ID: 91440.04

Matrix: aqueous

Date Sampled: 7/29/10

Date Received: 8/2/10

Units: ug/l

Date of Extraction/Prep: 8/4/10

Date of Analysis: 8/5/10

Analyst: BML

Method: 8270D

Dilution Factor: 1

Bis(2-ethylhexyl)phthalate < 5

Nitrobenzene-D5 (surr) 83 %R

2-Fluorobiphenyl (surr) 79 %R

p-Terphenyl-D14 (surr) 83 %R



QC REPORT

Eastern Analytical, Inc. ID#: 91440

Batch ID: 733988-55383/A080410BaseN1

Client: The Johnson Company

Client Designation: JARD | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Diethylphthalate	< 1	19 (74 %R)	18 (72 %R) (3 RPD)	8/5/2010	ug/l	40 - 114	20	8270D
Nitrobenzene-D5 (surr)	78 %R	82 %R	83 %R	8/5/2010	% Rec	35 - 114	20	8270D
2-Fluorobiphenyl (surr)	70 %R	78 %R	78 %R	8/5/2010	% Rec	43 - 116	20	8270D
p-Terphenyl-D14 (surr)	80 %R	87 %R	84 %R	8/5/2010	% Rec	33 - 130	20	8270D

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.



LABORATORY REPORT

Eastern Analytical, Inc. ID#: **91440**

Client: **The Johnson Company**

Client Designation: **JARD | 3-2218-3**

Sample ID:	MW-4D (30-35')	MW-6D (20-25')	MW-6D (30-35')
Lab Sample ID:	91440.01	91440.02	91440.03
Matrix:	soil	soil	soil
Date Sampled:	7/28/10	7/29/10	7/29/10
Date Received:	8/2/10	8/2/10	8/2/10
% Solid:	81.9	83.1	79.3
Units:	mg/kg	mg/kg	mg/kg
Date of Extraction/Prep:	8/3/10	8/3/10	8/3/10
Date of Analysis:	8/5/10	8/5/10	8/5/10
Analyst:	JW	JW	JW
Extraction Method:	3540C	3540C	3540C
Analysis Method:	8082	8082	8082
Dilution Factor:	1	466	1
PCB-1016	< 0.08	210	0.19
PCB-1221	< 0.08	< 30	< 0.08
PCB-1232	< 0.08	< 30	< 0.08
PCB-1242	< 0.08	< 30	< 0.08
PCB-1248	< 0.08	< 30	< 0.08
PCB-1254	< 0.08	< 30	< 0.08
PCB-1260	< 0.08	< 30	< 0.08
TMX (surr)	81 %R	DOR	84 %R
DCB (surr)	73 %R	DOR	70 %R

DOR: Diluted out of range.

Acid cleanup was performed on the samples and associated Batch QC.



QC REPORT

Eastern Analytical, Inc. ID#: 91440

Batch ID: 733988-29436/S080210PCB2

Client: The Johnson Company

Client Designation: JARD | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.07	0.30 (114 %R)	0.30 (112 %R) (2 RPD)	8/3/2010	mg/kg	40 - 140	30	8082
PCB-1221	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/3/2010	mg/kg	40 - 140	30	8082
PCB-1232	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/3/2010	mg/kg	40 - 140	30	8082
PCB-1242	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/3/2010	mg/kg	40 - 140	30	8082
PCB-1248	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/3/2010	mg/kg	40 - 140	30	8082
PCB-1254	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/3/2010	mg/kg	40 - 140	30	8082
PCB-1260	< 0.07	0.29 (110 %R)	0.29 (109 %R) (1 RPD)	8/3/2010	mg/kg	40 - 140	30	8082
TMX (surr)	104 %R	104 %R	101 %R	8/3/2010	% Rec	30 - 150		8082
DCB (surr)	100 %R	101 %R	97 %R	8/3/2010	% Rec	30 - 150		8082

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 91440

Client: The Johnson Company

Client Designation: JARD | 3-2218-3

Sample ID: WT-01

Lab Sample ID: 91440.04
Matrix: aqueous
Date Sampled: 7/29/10
Date Received: 8/2/10
Units: ug/l
Date of Extraction/Prep: 8/3/10
Date of Analysis: 8/3/10
Analyst: JW
Method: 8082
Dilution Factor: 1

PCB-1016	< 0.5
PCB-1221	< 0.5
PCB-1232	< 0.5
PCB-1242	< 0.5
PCB-1248	< 0.5
PCB-1254	< 0.5
PCB-1260	< 0.5
TMX (surr)	93 %R
DCB (surr)	98 %R



QC REPORT

Eastern Analytical, Inc. ID#: 91440

Batch ID: 733986-32117/A080210E608P1

Client: The Johnson Company

Client Designation: JARD | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.5	4.5 (112 %R)	4.5 (113 %R) (1 RPD)	8/2/2010	ug/l	40 - 140	20	608
PCB-1221	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/2/2010	ug/l	40 - 140	20	608
PCB-1232	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/2/2010	ug/l	40 - 140	20	608
PCB-1242	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/2/2010	ug/l	40 - 140	20	608
PCB-1248	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/2/2010	ug/l	40 - 140	20	608
PCB-1254	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/2/2010	ug/l	40 - 140	20	608
PCB-1260	< 0.5	4.3 (107 %R)	4.4 (109 %R) (2 RPD)	8/2/2010	ug/l	40 - 140	20	608
TMX (surr)	91 %R	90 %R	90 %R	8/2/2010	% Rec	30 - 150		608
DCB (surr)	90 %R	103 %R	104 %R	8/2/2010	% Rec	30 - 150		608

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

[illegible]

PROJECT MANAGER: Dan Baston
COMPANY: The Johnson Company
ADDRESS: 100 State St. Suite 600
CITY: Montpelier STATE: VT ZIP: 05602
PHONE: (802) 229-4600 EXT.: 155
FAX: (802) 229-5876
E-MAIL: DBASTON@JSCOMAIL.COM
SITE NAME: SIARD
PROJECT #: 3-2218-3
STATE: NH MA ME VT OTHER: _____
REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER: _____
QUOTE #: _____ PO #: _____

DATE NEEDED: Standard TAA

OA/OC

REPORTING LEVEL

A B C

OR

MA MCP

PRESUMPTIVE CERTAINTY

~~SAMPLER(S):~~

RELINQUISHED BY:

DATE: _____

TIME:

RECEIVED BY:

RELINQUISHED BY:

DATE: _____

TIME:

RECEIVED BY:

RELINQUISHED BY:

DATE: _____

TIME:

RECEIVED BY:

TEMP. 3 °C

ICE? ☒ YES ☐ NO

REPORTING OPTIONS

PRELIMS: YES OR NO

IF YES: FAX OR PDF

ELECTRONIC OPTIONS

NO FAX E-MAIL PDF

EFMD EQUIS ACCREDITED

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS: _____

DISSOLVED METALS FIELD FILTERED?	YES	NO
----------------------------------	-----	----

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

PCBs with Soxhlet extraction
SVOC sample for DEHP only

SITE HISTORY: Capacitor Manufacture

SUSPECTED CONTAMINATION: PCBS

FIELD READINGS: _____

Page 90 of 244

IRS Reference #65



Daniel Baston
The Johnson Company
100 State Street
Montpelier, VT 05602

eastern analytical, inc.
professional laboratory services



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 91702
Client Identification: Jard / 3-2218-3
Date Received: 8/9/2010

Dear Mr. Baston:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,


Lorraine Olshaw, Lab Director

8-20-10
Date

8
of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

Eastern Analytical, Inc. ID#: 91702

Client: **The Johnson Company**

Client Designation: **Jard / 3-2218-3**

Temperature upon receipt (°C): 7.4

Received on ice or cold packs (Yes/No): Y

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
91702.01	SB-16 (10-15')	8/9/10	8/6/10	soil	87.0	Sample temperature exceeded 6° upon receipt
91702.02	SB-16 (25-30')	8/9/10	8/6/10	soil	85.8	Sample temperature exceeded 6° upon receipt
91702.03	MW-3D (20-25')	8/9/10	8/2/10	soil	84.5	Sample temperature exceeded 6° upon receipt
91702.04	MW-3D (10-15')	8/9/10	8/2/10	soil	84.3	Sample temperature exceeded 6° upon receipt
91702.05	MW-9D (25-30')	8/9/10	8/5/10	soil	84.5	Sample temperature exceeded 6° upon receipt
91702.06	MW-3D (25')	8/9/10	8/2/10	soil	78.0	Sample temperature exceeded 6° upon receipt
91702.07	MW-10A (1.6-2.6')	8/9/10	8/5/10	soil	82.0	Sample temperature exceeded 6° upon receipt

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983*
- 2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998*
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB*
- 4) Hach Water Analysis Handbook, 2nd edition, 1992*



LABORATORY REPORT

Eastern Analytical, Inc. ID#: **91702**

Client: **The Johnson Company**

Client Designation: **Jard / 3-2218-3**

Sample ID:	SB-16 (10-15')	SB-16 (25-30')	MW-3D (20-25')	MW-3D (10-15')	MW-9D (25-30')	MW-3D (25')	MW-10A (1.6-2.6')
Lab Sample ID:	91702.01	91702.02	91702.03	91702.04	91702.05	91702.06	91702.07
Matrix:	soil	soil	soil	soil	soil	soil	soil
Date Sampled:	8/6/10	8/6/10	8/2/10	8/2/10	8/5/10	8/2/10	8/5/10
Date Received:	8/9/10	8/9/10	8/9/10	8/9/10	8/9/10	8/9/10	8/9/10
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date of Extraction/Prep:	8/10/10	8/10/10	8/10/10	8/10/10	8/16/10	8/10/10	8/16/10
Date of Analysis:	8/11/10	8/11/10	8/11/10	8/11/10	8/17/10	8/11/10	8/17/10
Analyst:	JMR	JMR	JMR	JMR	JMR	JMR	JMR
Method:	8270D	8270D	8270D	8270D	8270D	8270D	8270D
Dilution Factor:	568	1	577	14578	1	624	1
bis(2-Ethylhexyl)phthalate	2400	< 7.5	3100	43000	< 0.3	3200	< 0.3
Nitrobenzene-D5 (surr)	DOR	53 %R	DOR	DOR	71 %R	DOR	63 %R
2-Fluorobiphenyl (surr)	DOR	55 %R	DOR	DOR	74 %R	DOR	71 %R
p-Terphenyl-D14 (surr)	DOR	59 %R	DOR	DOR	84 %R	DOR	70 %R

DOR: Diluted out of range.

MW-9D (25-30') and MW-10A (1.6-2.6'): Sample results are from re-extraction performed on 8/16/2010.



QC REPORT

Eastern Analytical, Inc. ID#: 91702

Batch ID: 733994-42428/S081010ABN1

Client: The Johnson Company

Client Designation: Jard / 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
bis(2-Ethylhexyl)phthalate	< 7.5	1.1 (68 %R)	1.2 (71 %R) (4 RPD)	8/10/2010	mg/kg	40 - 140	30	8270D
Nitrobenzene-D5 (surr)	65 %R	67 %R	60 %R	8/10/2010	mg/kg	30 - 130		8270D
2-Fluorobiphenyl (surr)	67 %R	68 %R	62 %R	8/10/2010	mg/kg	30 - 130		8270D
p-Terphenyl-D14 (surr)	74 %R	73 %R	75 %R	8/10/2010	mg/kg	30 - 130		8270D

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.



QC REPORT

Eastern Analytical, Inc. ID#: 91702

Batch ID: 734000-56231/S081610BaseN1

Client: The Johnson Company

Client Designation: Jard / 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
bis(2-Ethylhexyl)phthalate	< 0.3	1.3 (75 %R)	1.1 (68 %R) (10 RPD)	8/17/2010	mg/kg	40 - 140	30	8270D
Nitrobenzene-D5 (surr)	63 %R	70 %R	64 %R	8/17/2010	mg/kg	30 - 130		8270D
2-Fluorobiphenyl (surr)	76 %R	77 %R	71 %R	8/17/2010	mg/kg	30 - 130		8270D
p-Terphenyl-D14 (surr)	81 %R	96 %R	78 %R	8/17/2010	mg/kg	30 - 130		8270D

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.



LABORATORY REPORT

Eastern Analytical, Inc. ID#: **91702**

Client: **The Johnson Company**

Client Designation: **Jard / 3-2218-3**

Sample ID:	SB-16 (10-15')	SB-16 (25-30')	MW-3D (20-25')	MW-3D (10-15')	MW-9D (25-30')	MW-3D (25')	MW-10A (1.6-2.6')
Lab Sample ID:	91702.01	91702.02	91702.03	91702.04	91702.05	91702.06	91702.07
Matrix:	soil	soil	soil	soil	soil	soil	soil
Date Sampled:	8/6/10	8/6/10	8/2/10	8/2/10	8/5/10	8/2/10	8/5/10
Date Received:	8/9/10	8/9/10	8/9/10	8/9/10	8/9/10	8/9/10	8/9/10
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date of Extraction/Prep:	8/10/10	8/17/10	8/10/10	8/10/10	8/17/10	8/10/10	8/17/10
Date of Analysis:	8/12/10	8/18/10	8/12/10	8/12/10	8/18/10	8/12/10	8/18/10
Analyst:	JW	JW	JW	JW	JW	JW	JW
Method:	8082	8082	8082	8082	8082	8082	8082
Dilution Factor:	226	1	11678	11516	1	25453	1
PCB-1016	50	< 0.08	3000	6300	< 0.08	7000	< 0.08
PCB-1221	< 20	< 0.08	< 800	< 800	< 0.08	< 2000	< 0.08
PCB-1232	< 20	< 0.08	< 800	< 800	< 0.08	< 2000	< 0.08
PCB-1242	< 20	< 0.08	< 800	< 800	< 0.08	< 2000	< 0.08
PCB-1248	< 20	< 0.08	< 800	< 800	< 0.08	< 2000	< 0.08
PCB-1254	< 20	< 0.08	< 800	< 800	< 0.08	< 2000	< 0.08
PCB-1260	< 20	< 0.08	< 800	< 800	< 0.08	< 2000	< 0.08
TMX (surr)	DOR	103 %R	DOR	DOR	103 %R	DOR	88 %R
DCB (surr)	DOR	120 %R	DOR	DOR	109 %R	DOR	64 %R

Acid cleanup was performed on the samples and associated Batch QC.

DOR: Diluted out of range.

SB-16 (25-30'), MW-9D (25-30'), and MW-10A (1.6-2.6'): Sample results are from re-extraction performed on 8/17/10.



QC REPORT

Eastern Analytical, Inc. ID#: 91702

Batch ID: 733994-42118/S081010PCB1

Client: The Johnson Company

Client Designation: Jard / 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.07	* 0.47 (176 %R)	* 0.49 (183 %R) (4 RPD)	8/13/2010	mg/kg	40 - 140	30	8082
PCB-1221	< 0.07	< 0.07 (%R)	< 0.07 (%R N/A) (RPD)	8/13/2010	mg/kg	40 - 140	30	8082
PCB-1232	< 0.07	< 0.07 (%R)	< 0.07 (%R N/A) (RPD)	8/13/2010	mg/kg	40 - 140	30	8082
PCB-1242	< 0.07	< 0.07 (%R)	< 0.07 (%R N/A) (RPD)	8/13/2010	mg/kg	40 - 140	30	8082
PCB-1248	< 0.07	< 0.07 (%R)	< 0.07 (%R N/A) (RPD)	8/13/2010	mg/kg	40 - 140	30	8082
PCB-1254	< 0.07	< 0.07 (%R)	< 0.07 (%R N/A) (RPD)	8/13/2010	mg/kg	40 - 140	30	8082
PCB-1260	< 0.07	0.26 (97 %R)	0.28 (106 %R) (9 RPD)	8/13/2010	mg/kg	40 - 140	30	8082
TMX (surr)	83 %R	92 %R	94 %R	8/13/2010	% Rec	30 - 150		8082
DCB (surr)	89 %R	105 %R	109 %R	8/13/2010	% Rec	30 - 150		8082

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.

The LCS/LCSD demonstrated recoveries above the acceptance range for Aroclor 1016. The high recoveries may be due to high concentrations of Aroclor 1016 detected in the samples in the extraction batch.



QC REPORT

Eastern Analytical, Inc. ID#: 91702

Batch ID: 734001-51464/S081710PCB1

Client: The Johnson Company

Client Designation: Jard / 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.07	0.30 (112 %R)	0.30 (113 %R) (1 RPD)	8/18/2010	mg/kg	40 - 140	30	8082
PCB-1221	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/18/2010	mg/kg	40 - 140	30	8082
PCB-1232	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/18/2010	mg/kg	40 - 140	30	8082
PCB-1242	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/18/2010	mg/kg	40 - 140	30	8082
PCB-1248	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/18/2010	mg/kg	40 - 140	30	8082
PCB-1254	< 0.07	< 0.07 (%R N/A)	< 0.07 (%R N/A) (RPD)	8/18/2010	mg/kg	40 - 140	30	8082
PCB-1260	< 0.07	0.30 (111 %R)	0.29 (108 %R) (3 RPD)	8/18/2010	mg/kg	40 - 140	30	8082
TMX (surr)	94 %R	102 %R	99 %R	8/18/2010	% Rec	30 - 150		8082
DCB (surr)	96 %R	120 %R	102 %R	8/18/2010	% Rec	30 - 150		8082

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE/TIME *If COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)		VOC				SVOC				TCLP	METALS	INORGANICS										MICRO	OTHER	# of CONTAINERS	NOTES MeOH Vial #
		GRAB/*COMPOSITE		524.2 524.2 BTX 8260B 624 1, 4 DIOXANE 8021B BTEX 8015B GRO 8270C 625 ABN A BN PAH	VTCS EDB HALOS	MEGRO MAIPH	LI L2	MEGRO MAEPH	PCB 608 PCB 8081A OIL & GREASE 1664 TPH 1664	ABN PEST HERB	DISSOLVED METALS (LIST BELOW)	TOTAL METALS (LIST BELOW)	TS TSS TDS SPEC. CON.	Br Cl F SO ₄ NO ₃ NO ₂ NO ₃ /NO ₂	BOD CBOD T. ALK.	TKN NH ₃ T. PHOS.	pH T. RES. CHLORINE	COD PHENOLS TOC	TOTAL CYANIDE TOTAL SULFIDE	REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY	T. COLIFORM E. COLI	F. COLIFORM ENTEROCOCCI	HETEROTROPHIC PLATE COUNT				
SB-16 (10-15')	8/6/10 1047	S	G				X		X																1		
SB-16 (25-30')	8/6/10 1044	S	G				X		X																1		
MW-3D (20-25')	8/2/10 1427	S	G				X		X																1		
MW-3D (10-15')	8/2/10 1408	S	G				X		X																1		
MW-9D (25-30')	8/5/10 1023	S	G				X		X																1		
MW-3D (25')	8/2/10 1406	S	G				X		X																1		
MW-10A (1.6-2.6')	8/5/10 1202	S	G				X		X																1		
MATRIX: A-Air; S-Soil; GW-Ground Water; SW-Surface Water; DW-Drinking Water; WW-Waste Water																											
PRESERVATIVE: H-HCL; N-HNO ₃ ; S-H ₂ SO ₄ ; Na-NaOH; M-MEOH																											

PROJECT MANAGER: Daniel Boston
COMPANY: The Johnson Company
ADDRESS: 100 State St. Suite 600
CITY: Montpelier STATE: VT ZIP: 05602
PHONE: (802) 229-4600 EXT.: 155
FAX: (802) 229-5876
E-MAIL: DPBO@JCOMAIL.COM
SITE NAME: Sand
PROJECT #: 3-2218-3
STATE: NH MA ME (VT) OTHER:
REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER:
QUOTE #: PO #:

DATE NEEDED: Standard DAT

QA/QC
REPORTING LEVEL
A B C
OR
MA MCP
PRESUMPTIVE CERTAINTY

REPORTING OPTIONS
PRELIMS: YES OR NO
IF YES: FAX OR PDF

ELECTRONIC OPTIONS
 NO FAX ☒ E-MAIL ☒ RDF

TEMP. 7.4 °C
ICE? YES No

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS: _____

DISSOLVED METALS FIELD FILTERED?	YES	NO
----------------------------------	-----	----

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

Soxhlet extraction for PCB analysis

SVOC analysis report only
DEHP (CAS #117-81-7)

SITE HISTORY: _____

SUSPECTED CONTAMINATION: PCBs, DEHP

FIELD READINGS: _____

SAMPLER(S):	Dan Baskin		
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
Jerry Coon	8-9-10	0832	10 ⁴⁴ Jay Co
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
Jerry Coon	8-9-10	1517	Chris Johnson
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:



eastern analytical, inc.

professional laboratory services

25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMER_SERVICE@EAILABS.COM | WWW.EAILABS.COM

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)



Daniel Baston
The Johnson Company
100 State Street
Montpelier, VT 05602

eastern analytical, inc.
professional laboratory services



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 92320
Client Identification: Jard | 3-2218-3
Date Received: 8/31/2010

Dear Mr. Baston:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,


Lorraine Olashaw, Lab Director

9-9-10
Date

13
of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

Eastern Analytical, Inc. ID#: 92320

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Temperature upon receipt (°C): 5.6

Received on ice or cold packs (Yes/No): Y

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
92320.01	MW-12	8/31/10	8/30/10	aqueous		Adheres to Sample Acceptance Policy
92320.02	MW-13	8/31/10	8/30/10	aqueous		Adheres to Sample Acceptance Policy
92320.03	PZ-13	8/31/10	8/30/10	aqueous		Adheres to Sample Acceptance Policy
92320.04	MW-10	8/31/10	8/30/10	aqueous		Adheres to Sample Acceptance Policy
92320.05	MW-11	8/31/10	8/30/10	aqueous		Adheres to Sample Acceptance Policy
92320.06	Greene Well	8/31/10	8/30/10	aqueous		Adheres to Sample Acceptance Policy
92320.07	Greene Pipe	8/31/10	8/30/10	aqueous		Adheres to Sample Acceptance Policy
92320.08	PZ-14	8/31/10	8/30/10	aqueous		Adheres to Sample Acceptance Policy
92320.09	MW-7	8/31/10	8/31/10	aqueous		Adheres to Sample Acceptance Policy
92320.1	PZ-4	8/31/10	8/31/10	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 2nd edition, 1992



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 92320

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Sample ID:	MW-12	MW-13	PZ-13	MW-10	MW-11	Greene Well
Lab Sample ID:	92320.01	92320.02	92320.03	92320.04	92320.05	92320.06
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10
Date Received:	8/31/10	8/31/10	8/31/10	8/31/10	8/31/10	8/31/10
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10
Date of Analysis:	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10
Analyst:	JMR	JMR	JMR	JMR	JMR	JMR
Method:	8270D	8270D	8270D	8270D	8270D	8270D
Dilution Factor:	1	1	1	1	1	1
bis(2-Ethylhexyl)phthalate	< 5	< 5	< 5	< 5	< 5	< 5
Nitrobenzene-D5 (surr)	79 %R	82 %R	82 %R	81 %R	85 %R	82 %R
2-Fluorobiphenyl (surr)	84 %R	87 %R	87 %R	88 %R	87 %R	89 %R
p-Terphenyl-D14 (surr)	82 %R	85 %R	86 %R	88 %R	88 %R	87 %R



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 92320

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Sample ID:	Greene Pipe	PZ-14	MW-7	PZ-4
Lab Sample ID:	92320.07	92320.08	92320.09	92320.1
Matrix:	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/30/10	8/30/10	8/31/10	8/31/10
Date Received:	8/31/10	8/31/10	8/31/10	8/31/10
Units:	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/1/10	9/1/10	9/1/10	9/1/10
Date of Analysis:	9/1/10	9/1/10	9/1/10	9/1/10
Analyst:	JMR	JMR	JMR	JMR
Method:	8270D	8270D	8270D	8270D
Dilution Factor:	1	1	1	1
bis(2-Ethylhexyl)phthalate	< 5	< 5	< 5	< 5
Nitrobenzene-D5 (surr)	84 %R	85 %R	82 %R	83 %R
2-Fluorobiphenyl (surr)	88 %R	88 %R	85 %R	85 %R
p-Terphenyl-D14 (surr)	86 %R	89 %R	87 %R	88 %R



QC REPORT

Eastern Analytical, Inc. ID#: 92320

Batch ID: 734016-36282/A090110BaseN1

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
bis(2-Ethylhexyl)phthalate	< 5	20 (78 %R)	21 (84 %R) (7 RPD)	9/1/2010	ug/l	40 - 140	20	8270D
Nitrobenzene-D5 (surr)	84 %R	84 %R	89 %R	9/1/2010	% Rec	35 - 114	20	8270D
2-Fluorobiphenyl (surr)	83 %R	86 %R	90 %R	9/1/2010	% Rec	43 - 116	20	8270D
p-Terphenyl-D14 (surr)	87 %R	90 %R	95 %R	9/1/2010	% Rec	33 - 130	20	8270D

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 92320

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Sample ID:	MW-12	MW-13	PZ-13	MW-10	MW-11	Greene Well
Lab Sample ID:	92320.01	92320.02	92320.03	92320.04	92320.05	92320.06
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10	8/30/10
Date Received:	8/31/10	8/31/10	8/31/10	8/31/10	8/31/10	8/31/10
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10
Date of Analysis:	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Analyst:	JW	JW	JW	JW	JW	JW
Method:	8082	8082	8082	8082	8082	8082
Dilution Factor:	10	1	1	1	1	1
PCB-1016	40	< 0.5	< 0.5	1.6	< 0.5	1.3
PCB-1221	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1232	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1242	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1248	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1254	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1260	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TMX (surr)	83 %R	86 %R	82 %R	83 %R	79 %R	81 %R
DCB (surr)	65 %R	88 %R	71 %R	73 %R	38 %R	87 %R

Greene Well: The sample contains more of the heavier Aroclor 1016 congeners than what would normally be expected. The concentration of Aroclor 1016 may be underestimated. Refer to the sample chromatogram overlay for more details.



LABORATORY REPORT

Eastern Analytical, Inc. ID#: **92320**

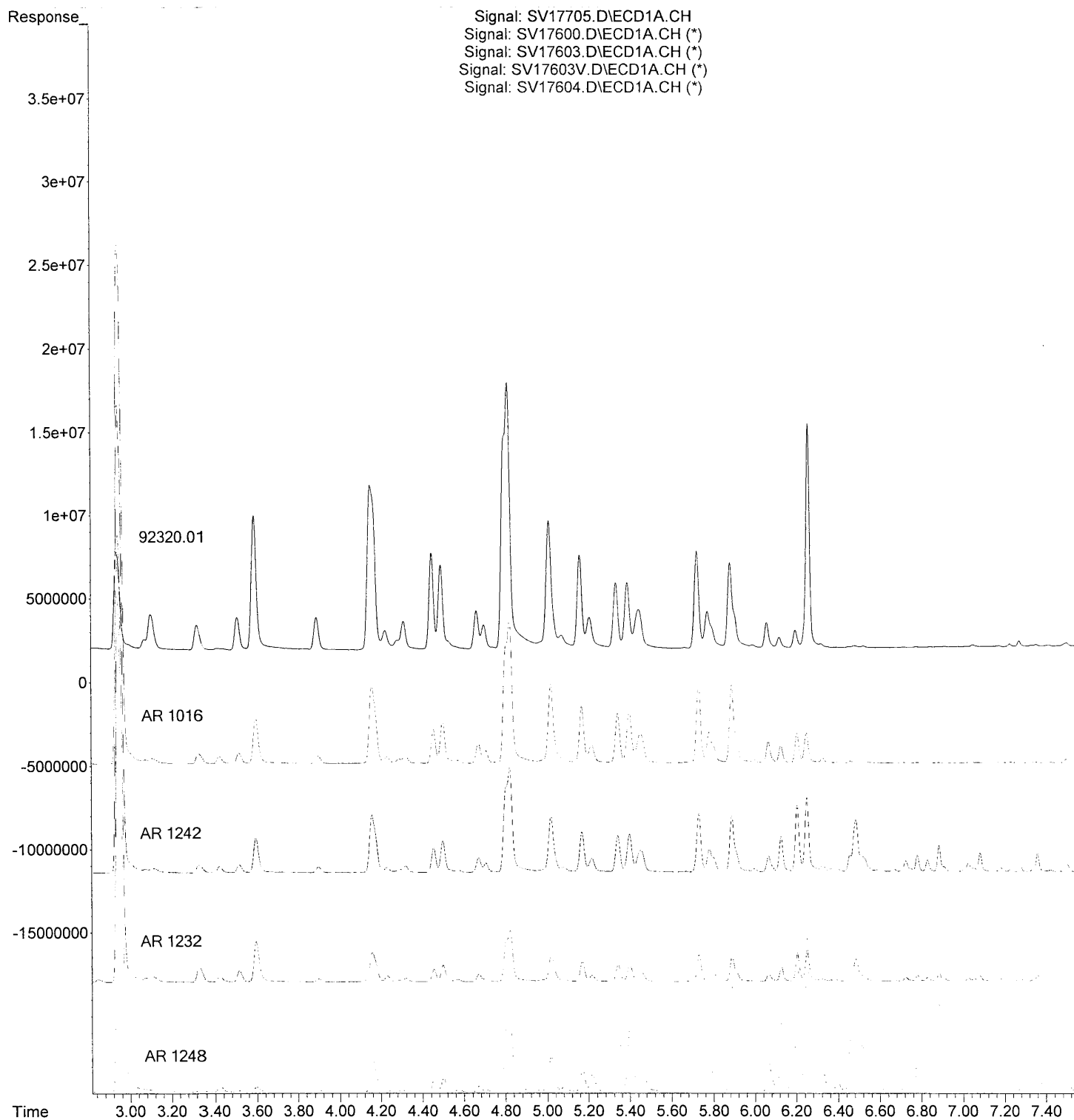
Client: **The Johnson Company**

Client Designation: **Jard | 3-2218-3**

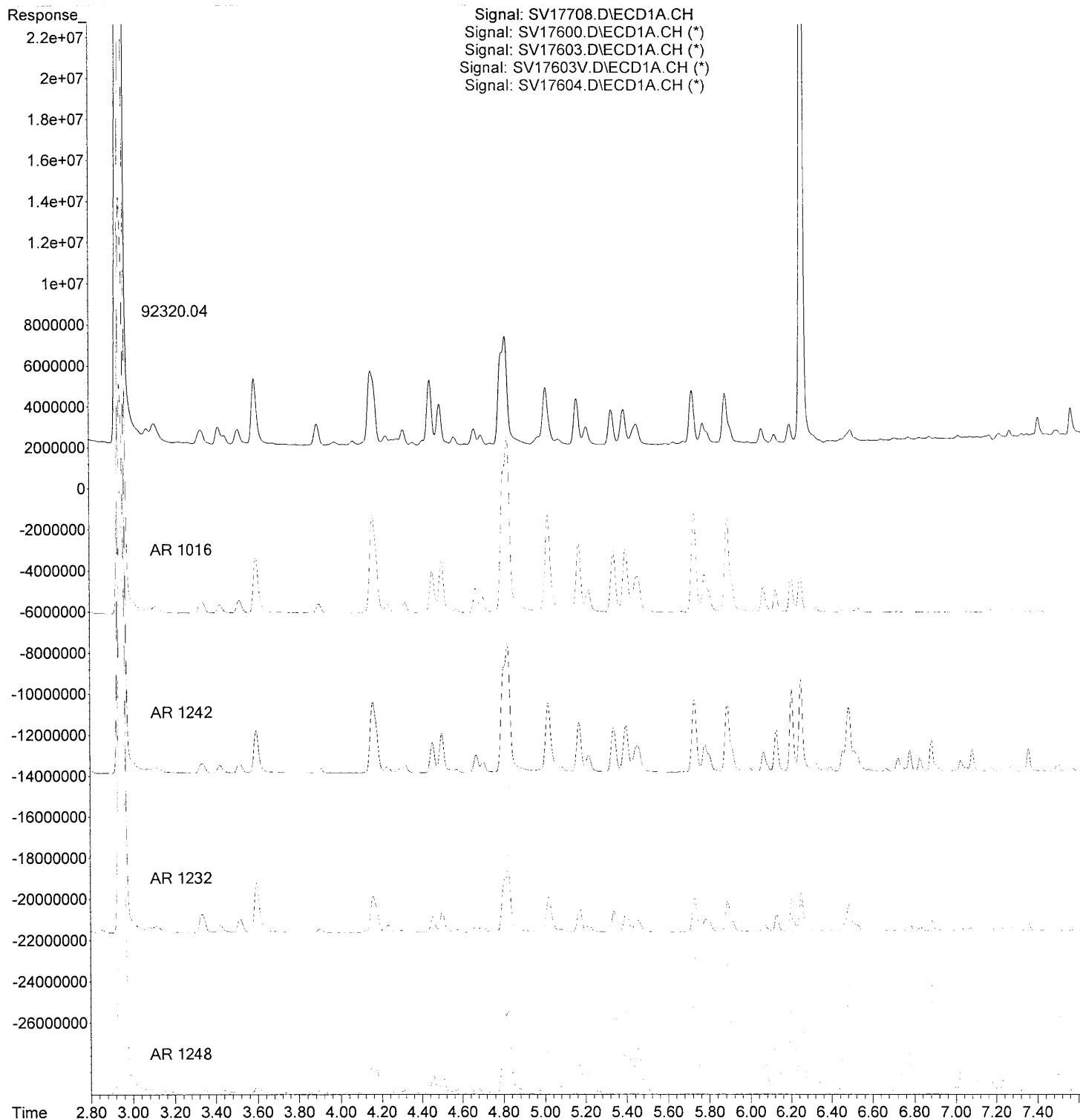
Sample ID:	Greene Pipe	PZ-14	MW-7	PZ-4
Lab Sample ID:	92320.07	92320.08	92320.09	92320.1
Matrix:	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/30/10	8/30/10	8/31/10	8/31/10
Date Received:	8/31/10	8/31/10	8/31/10	8/31/10
Units:	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/1/10	9/1/10	9/1/10	9/1/10
Date of Analysis:	9/2/10	9/2/10	9/2/10	9/2/10
Analyst:	JW	JW	JW	JW
Method:	8082	8082	8082	8082
Dilution Factor:	1	1	1	1
PCB-1016	1.7	0.7	< 0.5	< 0.5
PCB-1221	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1232	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1242	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1248	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1254	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1260	< 0.5	< 0.5	< 0.5	< 0.5
TMX (surr)	77 %R	89 %R	87 %R	87 %R
DCB (surr)	81 %R	75 %R	86 %R	87 %R

Samples Greene Pipe and PZ-14: The sample contains more of the heavier Aroclor 1016 congeners than what would normally be expected. The concentration of Aroclor 1016 may be underestimated. Refer to the sample chromatogram overlay for more details.

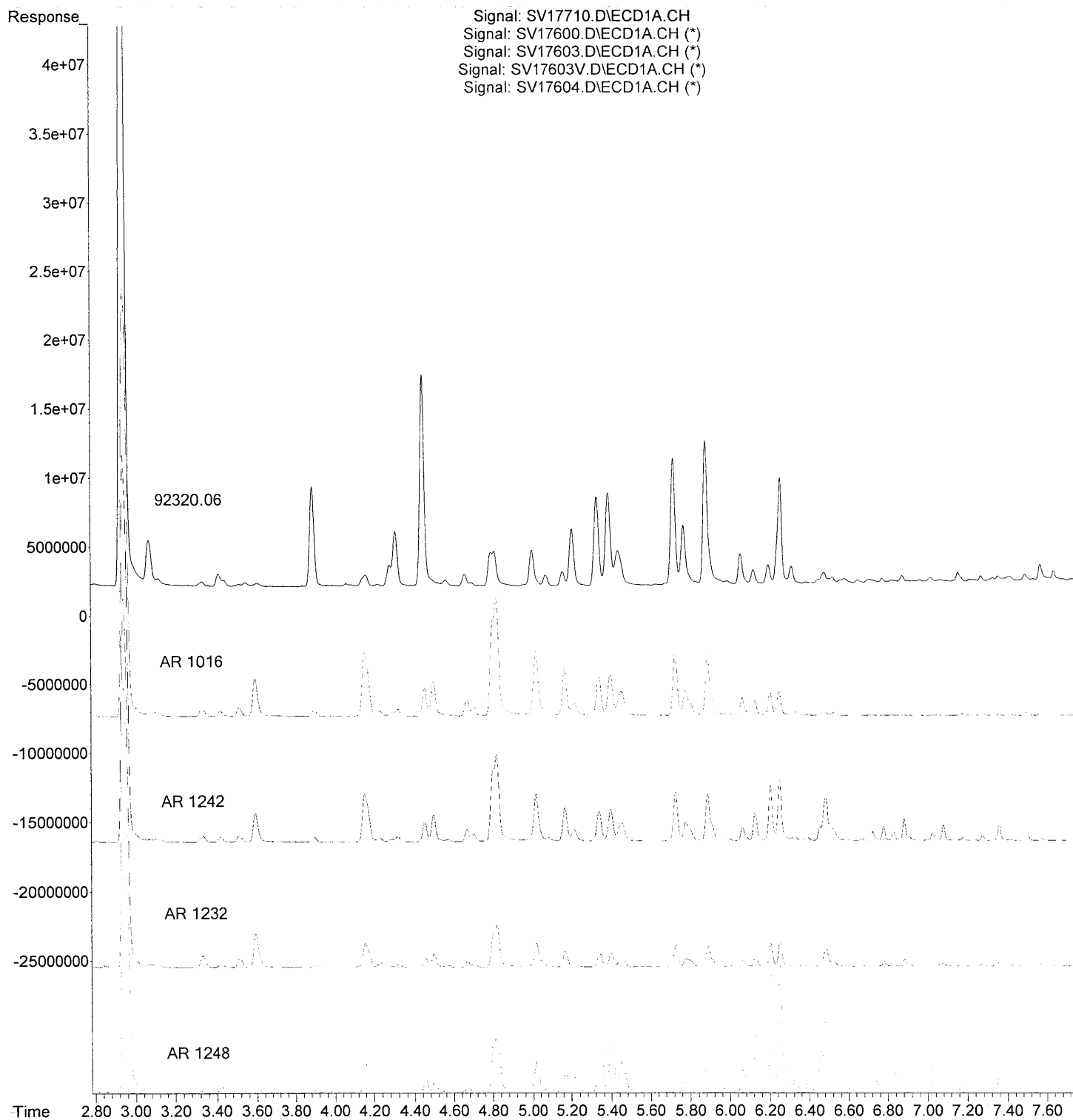
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Operator : JW
Acquired : 02 Sep 2010 8:57 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92320.01 10X
Misc Info : A090110PCB1
Vial Number: 18



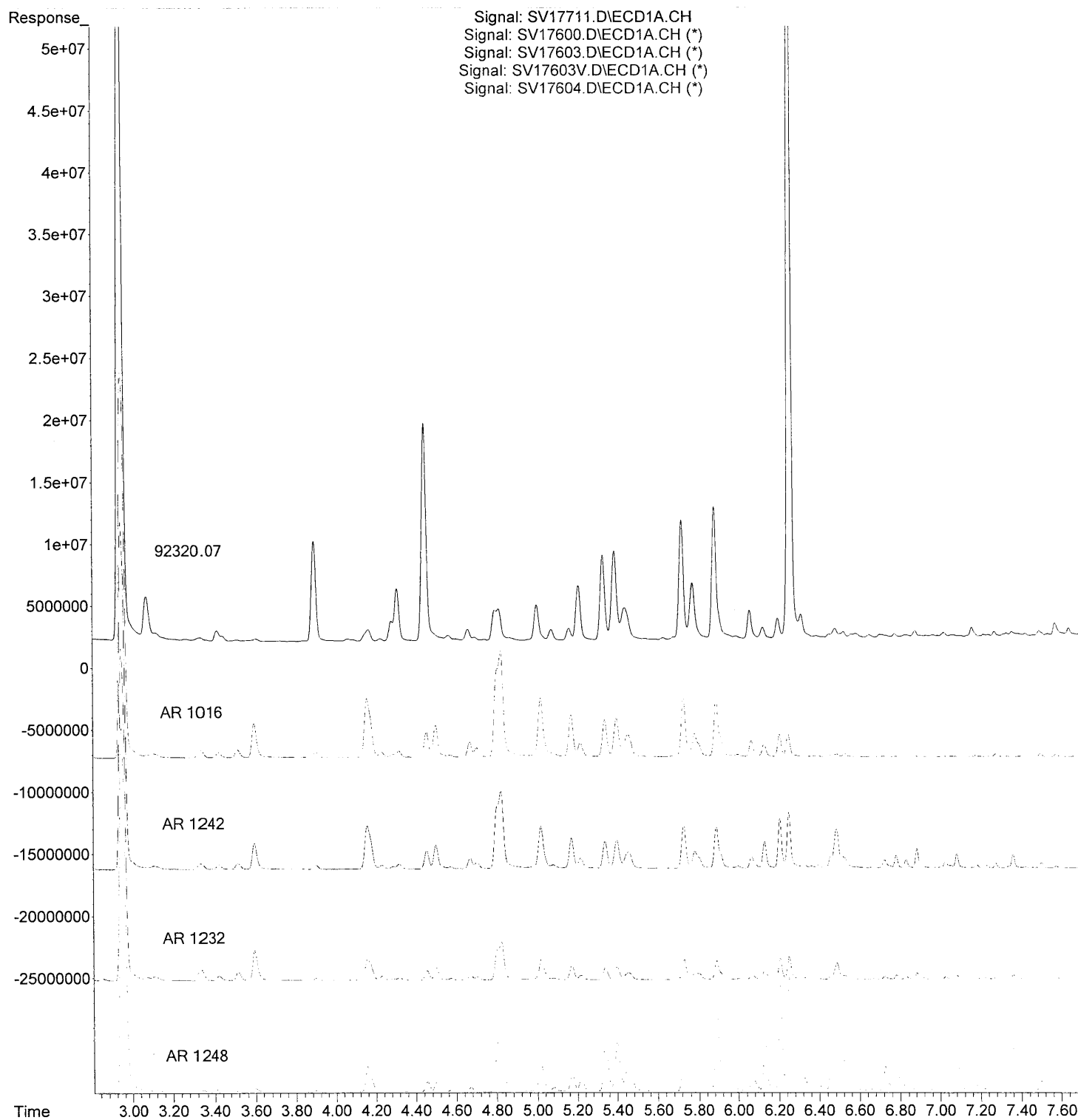
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Operator : JW
Acquired : 02 Sep 2010 9:42 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92320.04
Misc Info : A090110PCB1
Vial Number: 21



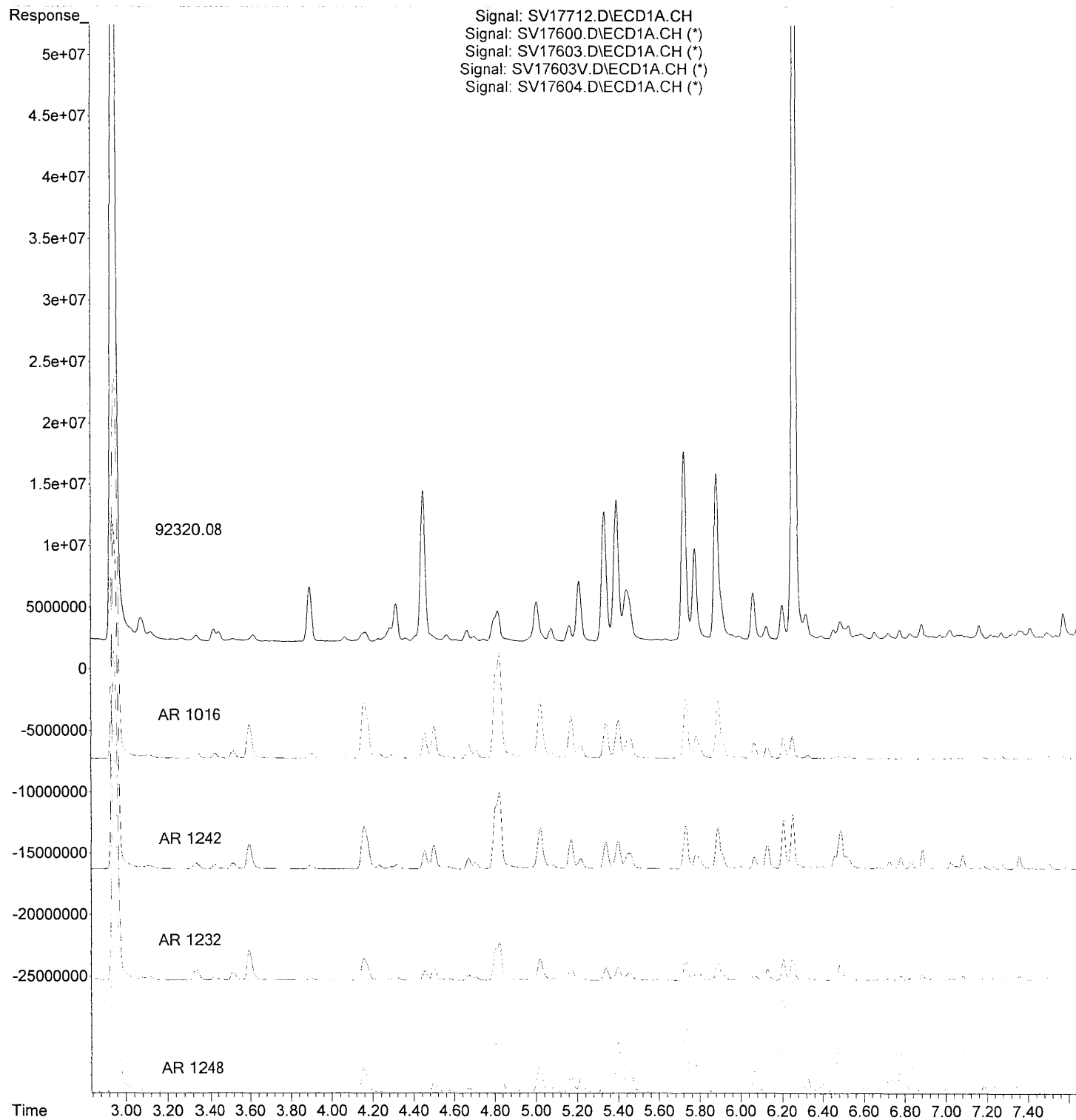
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Operator : JW
Acquired : 02 Sep 2010 10:12 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92320.06
Misc Info : A090110PCB1
Vial Number: 23



File :C:\msdchem\1\DATA\2010\090110\SV17711.D
Operator : JW
Acquired : 02 Sep 2010 10:27 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92320.07
Misc Info : A090110PCB1
Vial Number: 24



File :C:\msdchem\1\DATA\2010\090110\SV17712.D
Operator : JW
Acquired : 02 Sep 2010 10:42 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92320.08
Misc Info : A090110PCB1
Vial Number: 25





QC REPORT

Eastern Analytical, Inc. ID#: 92320

Batch ID: 734016-35328/A090110PCB1

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.5	3.8 (95 %R)	4.4 (110 %R) (15 RPD)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1221	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1232	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1242	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1248	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1254	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1260	< 0.5	3.8 (94 %R)	4.1 (103 %R) (9 RPD)	9/2/2010	ug/l	40 - 140	20	8082
TMX (surr)	81 %R	84 %R	90 %R	9/2/2010	% Rec	30 - 150		8082
DCB (surr)	97 %R	85 %R	100 %R	9/2/2010	% Rec	30 - 150		8082

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.

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(WHITE: ORIGINAL GREEN: PROJECT MANAGER)



Daniel Baston
The Johnson Company
100 State Street
Montpelier, VT 05602

eastern analytical, inc.
professional laboratory services



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 92370
Client Identification: Jard | 3-2218-3
Date Received: 9/1/2010

Dear Mr. Baston:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R : % Recovery


Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,


Lorraine Olshaw, Lab Director

9.9.10
Date

11
of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

Eastern Analytical, Inc. ID#: 92370

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Temperature upon receipt (°C): 5.4

Received on ice or cold packs (Yes/No): Y

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
92370.01	EPA-8	9/1/10	8/31/10	aqueous		Adheres to Sample Acceptance Policy
92370.02	PZ-05	9/1/10	8/31/10	aqueous		Adheres to Sample Acceptance Policy
92370.03	PZ-06	9/1/10	8/31/10	aqueous		Adheres to Sample Acceptance Policy
92370.04	EPA-7	9/1/10	8/31/10	aqueous		Adheres to Sample Acceptance Policy
92370.05	EPA-6	9/1/10	8/31/10	aqueous		Adheres to Sample Acceptance Policy
92370.06	EPA-4	9/1/10	8/31/10	aqueous		Adheres to Sample Acceptance Policy
92370.07	EPA-3	9/1/10	8/31/10	aqueous		Adheres to Sample Acceptance Policy
92370.08	MW-9	9/1/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy
92370.09	MW-9D	9/1/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy
92370.1	MW-8	9/1/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 2nd edition, 1992



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 92370

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Sample ID:	EPA-8	PZ-05	PZ-06	EPA-7	EPA-6	EPA-4
Lab Sample ID:	92370.01	92370.02	92370.03	92370.04	92370.05	92370.06
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/31/10	8/31/10	8/31/10	8/31/10	8/31/10	8/31/10
Date Received:	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Date of Analysis:	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Analyst:	JMR	JMR	JMR	JMR	JMR	JMR
Method:	8270D	8270D	8270D	8270D	8270D	8270D
Dilution Factor:	1	1	1	1	1	1
bis(2-Ethylhexyl)phthalate	< 5	< 5	< 5	< 5	< 5	< 5
Nitrobenzene-D5 (surr)	80 %R	84 %R	82 %R	84 %R	80 %R	82 %R
2-Fluorobiphenyl (surr)	83 %R	88 %R	85 %R	85 %R	83 %R	84 %R
p-Terphenyl-D14 (surr)	85 %R	87 %R	86 %R	88 %R	84 %R	85 %R



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 92370

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Sample ID:	EPA-3	MW-9	MW-9D	MW-8
Lab Sample ID:	92370.07	92370.08	92370.09	92370.1
Matrix:	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/31/10	9/1/10	9/1/10	9/1/10
Date Received:	9/1/10	9/1/10	9/1/10	9/1/10
Units:	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/2/10	9/2/10	9/2/10	9/2/10
Date of Analysis:	9/2/10	9/2/10	9/2/10	9/2/10
Analyst:	JMR	JMR	JMR	JMR
Method:	8270D	8270D	8270D	8270D
Dilution Factor:	1	1	1	1
bis(2-Ethylhexyl)phthalate	< 5	< 5	< 5	< 5
Nitrobenzene-D5 (surr)	80 %R	78 %R	80 %R	81 %R
2-Fluorobiphenyl (surr)	80 %R	82 %R	81 %R	85 %R
p-Terphenyl-D14 (surr)	83 %R	81 %R	83 %R	85 %R



QC REPORT

Eastern Analytical, Inc. ID#: 92370

Batch ID: 734016-36282/A090110BaseN1

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
bis(2-Ethylhexyl)phthalate	< 5	20 (78 %R)	21 (84 %R) (7 RPD)	9/1/2010	ug/l	40 - 140	20	8270D
Nitrobenzene-D5 (surr)	84 %R	84 %R	89 %R	9/1/2010	% Rec	35 - 114	20	8270D
2-Fluorobiphenyl (surr)	83 %R	86 %R	90 %R	9/1/2010	% Rec	43 - 116	20	8270D
p-Terphenyl-D14 (surr)	87 %R	90 %R	95 %R	9/1/2010	% Rec	33 - 130	20	8270D

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 92370

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Sample ID:	EPA-8	PZ-05	PZ-06	EPA-7	EPA-6	EPA-4
Lab Sample ID:	92370.01	92370.02	92370.03	92370.04	92370.05	92370.06
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/31/10	8/31/10	8/31/10	8/31/10	8/31/10	8/31/10
Date Received:	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Date of Analysis:	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Analyst:	JW	JW	JW	JW	JW	JW
Method:	8082	8082	8082	8082	8082	8082
Dilution Factor:	1	1	1	1	1	1
PCB-1016	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1221	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1232	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1242	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1248	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1254	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1260	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TMX (surr)	98 %R	104 %R	103 %R	95 %R	92 %R	97 %R
DCB (surr)	93 %R	104 %R	106 %R	87 %R	87 %R	106 %R



LABORATORY REPORT

Eastern Analytical, Inc. ID#: **92370**

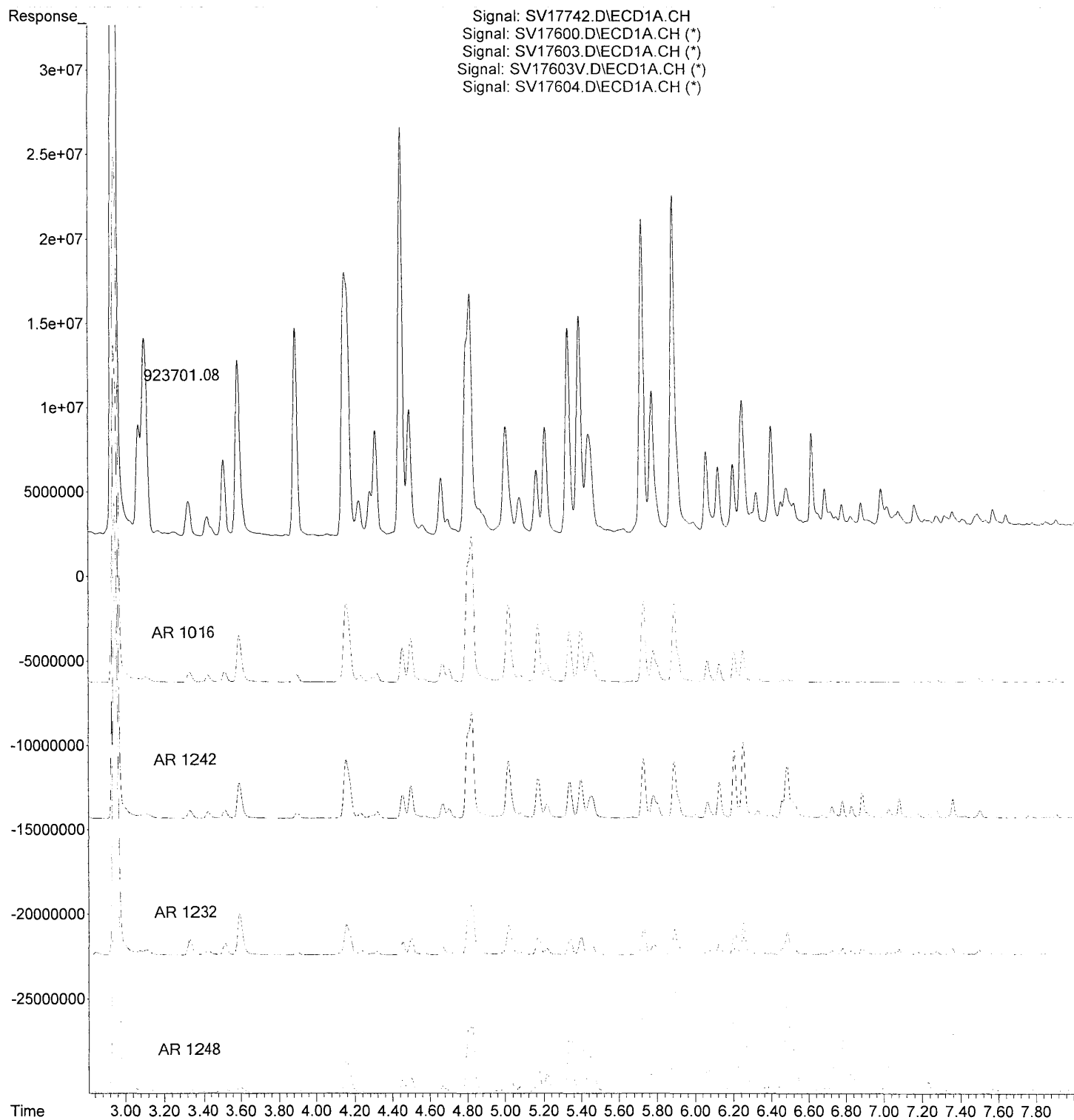
Client: **The Johnson Company**

Client Designation: **Jard | 3-2218-3**

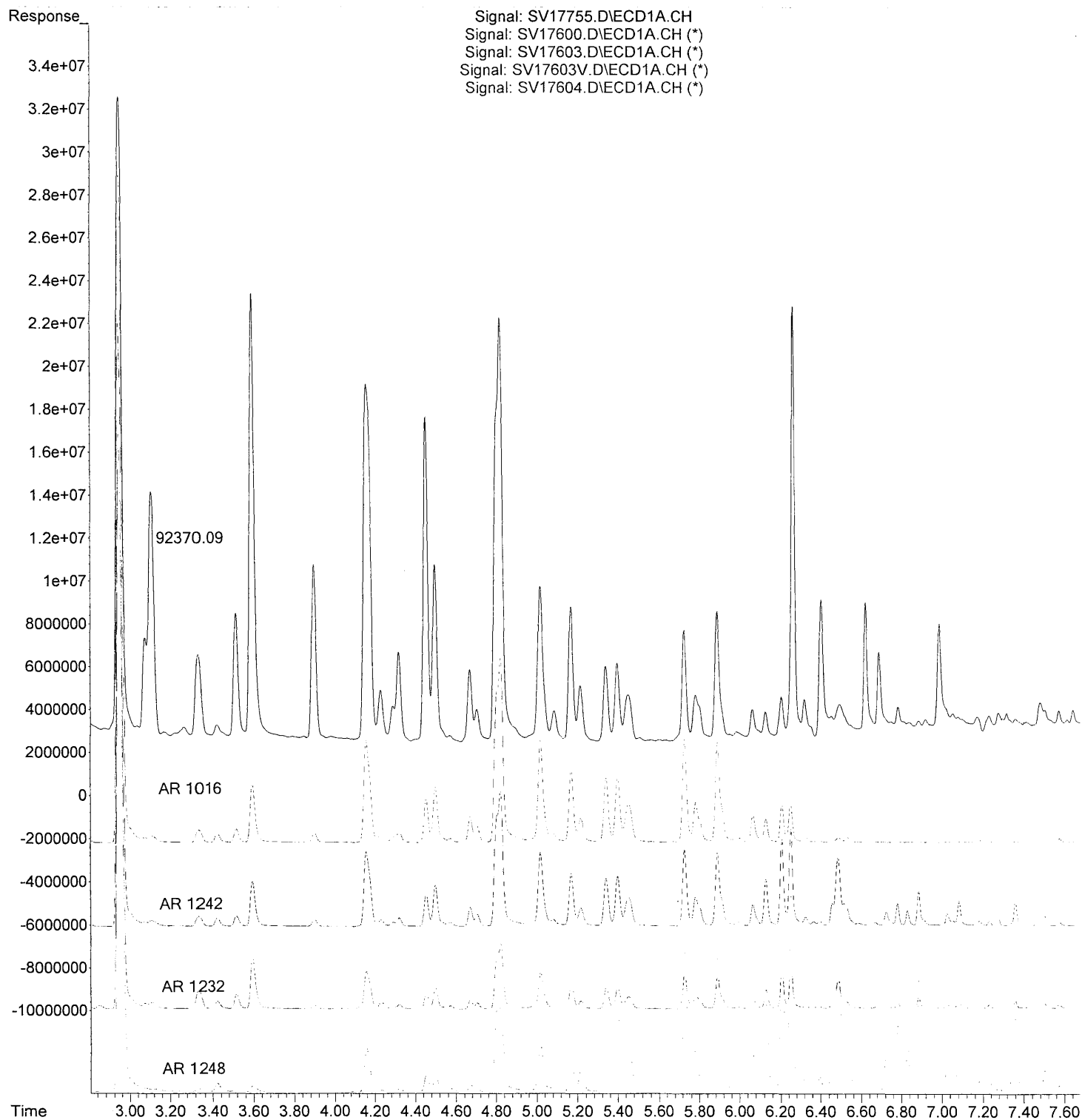
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Lab Sample ID:	92370.07	92370.08	92370.09	92370.1
Matrix:	aqueous	aqueous	aqueous	aqueous
Date Sampled:	8/31/10	9/1/10	9/1/10	9/1/10
Date Received:	9/1/10	9/1/10	9/1/10	9/1/10
Units:	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/2/10	9/2/10	9/2/10	9/2/10
Date of Analysis:	9/2/10	9/2/10	9/2/10	9/2/10
Analyst:	JW	JW	JW	JW
Method:	8082	8082	8082	8082
Dilution Factor:	1	1	2	1
PCB-1016	< 0.5	5.9	< 1	2.3
PCB-1221	< 0.5	< 0.5	< 1	< 0.5
PCB-1232	< 0.5	< 0.5	7	< 0.5
PCB-1242	< 0.5	< 0.5	< 1	< 0.5
PCB-1248	< 0.5	< 0.5	< 1	< 0.5
PCB-1254	< 0.5	< 0.5	< 1	< 0.5
PCB-1260	< 0.5	< 0.5	< 1	< 0.5
TMX (surr)	96 %R	93 %R	80 %R	88 %R
DCB (surr)	100 %R	79 %R	68 %R	71 %R

MW-9: The sample contains more of the heavier Aroclor 1016 congeners than what would normally be expected. The concentration of Aroclor 1016 may be underestimated. Refer to the sample chromatogram overlay for more details.

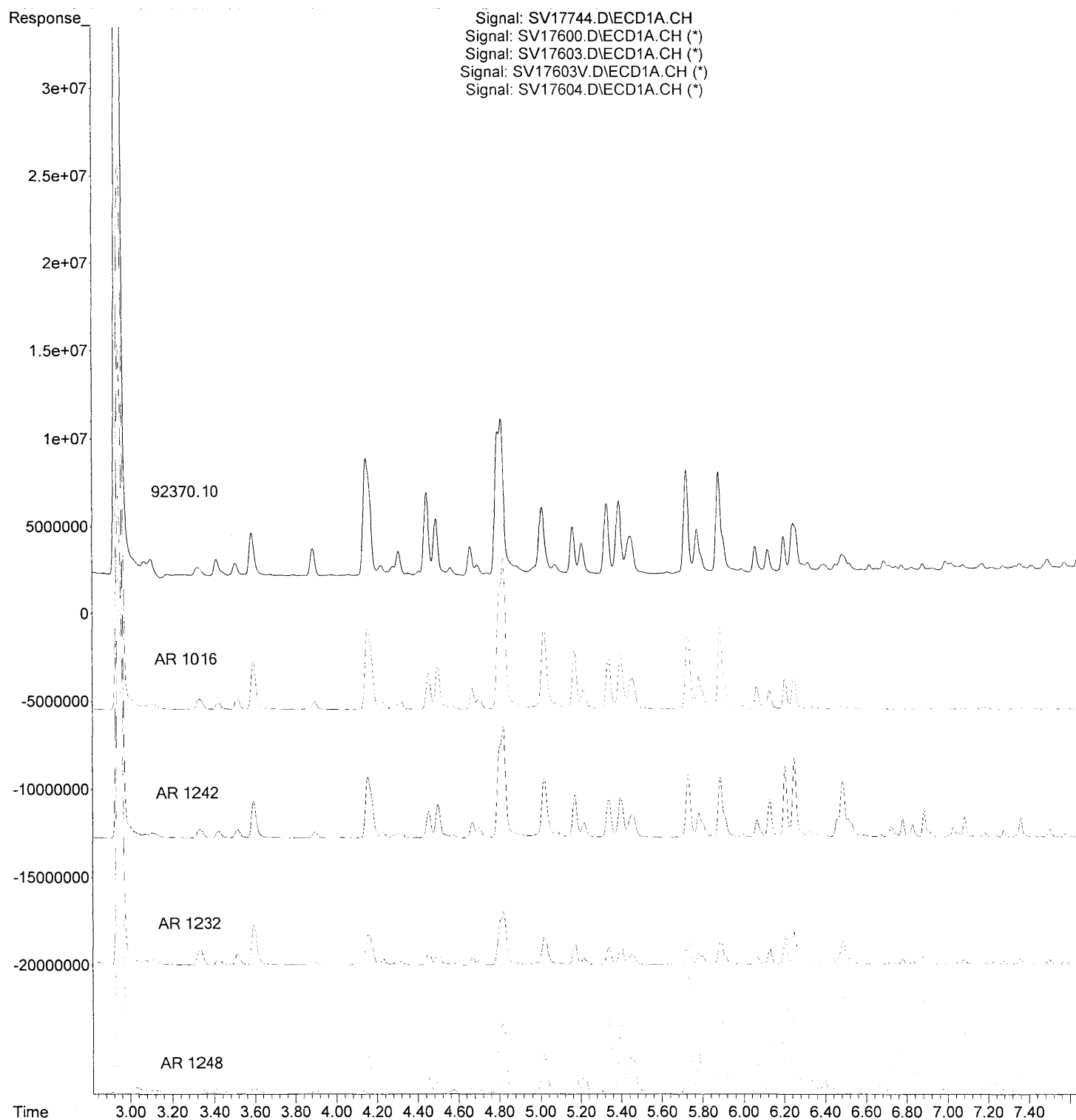
File :C:\msdchem\1\DATA\2010\090210\SV17742.D
Operator : JW
Acquired : 02 Sep 2010 21:06 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92370.08
Misc Info : A090110PCB1
Vial Number: 15



File :C:\msdchem\1\DATA\2010\090210\SV17755.D
Operator : JW
Acquired : 03 Sep 2010 10:48 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92370.09 2X
Misc Info : A090110PCB1
Vial Number: 16



File :C:\msdchem\1\DATA\2010\090210\SV17744.D
Operator : JW
Acquired : 02 Sep 2010 21:36 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92370.10
Misc Info : A090110PCB1
Vial Number: 17





QC REPORT

Eastern Analytical, Inc. ID#: 92370

Batch ID: 734016-35328/A090110PCB1

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.5	3.8 (95 %R)	4.4 (110 %R) (15 RPD)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1221	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1232	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1242	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1248	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1254	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/2/2010	ug/l	40 - 140	20	8082
PCB-1260	< 0.5	3.8 (94 %R)	4.1 (103 %R) (9 RPD)	9/2/2010	ug/l	40 - 140	20	8082
TMX (surr)	81 %R	84 %R	90 %R	9/2/2010	% Rec	30 - 150		8082
DCB (surr)	97 %R	85 %R	100 %R	9/2/2010	% Rec	30 - 150		8082

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE/TIME *If COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC	SVOC	TCLP METALS	INORGANICS	MICRO	OTHER	# OF CONTAINERS	NOTES MeOH Vial #
				5242 BTEX 5242 MTBE ONLY 82608 624 VTCS I, 4 DIOXANE EDB DBCP 8021B BTEX HALOS	8015B GRO MEGRO MAIPH 8270C 625 SVHC DEHP ABN A BN PAH ONLY TPH8100 LI L2	8015B DRD MEDRO MAEPH PEST 608 PCB 608 PEST 8081A PCB 8082 OIL & GREASE 1664 TPH 1664	TCLP 1311 ABN METALS VOC PEST HERB DISSOLVED METALS (LIST BELOW) TOTAL METALS (LIST BELOW)	TS TSS TDS SPEC CON. Br Cl F SO ₄ NO ₃ NO ₂ NO ₂ /NO ₃ BOD CBOD T. ALK. TKN NH ₃ T. PHOS. pH T. RES. CHLORINE COD PHENOLS TOC TOTAL CHLORIDE TOTAL SULFIDE REACTIVE CHLORIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY T. COLIFORM E. COLI E. COLIFORM ENTEROCOCCI HETEROTROPHIC PLATE COUNT	PCBs 1668 A		
EPA-8	8-31-10	GW	G	X	X					2	
PZ-05	9:50	GW	G	X	X					2	
PZ-06	11:30	GW	G	X	X					2	
EPA-7	15:05	GW	G	X	X					2	
EPA-6	16:15	GW	G	X	X					2	
EPA-4	17:30	GW	G	X	X					2	
EPA-3	18:40	GW	G	X	X					2	
MW-9	9-1-10	GW	G	X	X					2	
MW-9D	8:50	GW	G	X	X					2	
MW-8	10:20	GW	G	X	X					2	

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER;
WW-WASTE WATER

PRESERVATIVE: H-HCL; N-HNO₃; S-H₂SO₄; Na-NaOH; M-MEOH

(3-cooler)

PROJECT MANAGER: Daniel Baston
COMPANY: The Johnson Co
ADDRESS: 100 State St. Suite 600
CITY: Montpelier, VT STATE: VT ZIP: 05602
PHONE: 802-229-4600 EXT.:
FAX: 802-229-5876
E-MAIL: DPB@JCSMAIL.COM
SITE NAME: JARD
PROJECT #: 3-2218-3
STATE: NH MA ME VT OTHER:
REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER:
QUOTE #: PO #:

DATE NEEDED: Standard TAT

QA/QC
REPORTING LEVEL
A B C
OR
MA MCP
PRESUMPTIVE CERTAINTY

REPORTING OPTIONS
PRELIMS: YES OR NO
IF YES: FAX OR (PDF)

TEMP. 5.4 °C
ICE? ☒ YES ☐ NO

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS:

DISSOLVED METALS FIELD FILTERED?	YES	NO
----------------------------------	-----	----

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

PCB's - 1668A - chlorinated biphenyl
enzyme B by HABC/HAMS
method 1668A (Subtract +2
Columbia Analytical Services
Houston - Texas

SITE HISTORY: Capacitor facility

SUSPECTED CONTAMINATION: PCBs / DEHF

FIELD READINGS:

SAMPLER(S): Warren Downy 802-223-4502

RELINQUISHED BY: _____ DATE: 1/1/2012 TIME: 12:00 PM RECEIVED BY: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____

CORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMER_SERVICE@EAILABS.COM | WWW.EAILABS.COM

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)



Daniel Baston
The Johnson Company
100 State Street
Montpelier, VT 05602

eastern analytical, inc.
environmental laboratory, vermont



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 92417
Client Identification: Jard | 3-2218-3
Date Received: 9/2/2010

Dear Mr. Baston:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

- Solid samples are reported on a dry weight basis, unless otherwise noted
- < : "less than" followed by the reporting limit
- > : "greater than" followed by the reporting limit
- %R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,


Lorraine Olashaw, Lab Director

10-B-10
Date

43
of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

Eastern Analytical, Inc. ID#: 92417

Client: **The Johnson Company**

Client Designation: **Jard | 3-2218-3**

Temperature upon receipt (°C): **2**

Received on ice or cold packs (Yes/No): **Y**

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
92417.01	MW-1	9/2/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy
92417.02	EPA-10	9/2/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy
92417.03	DP-1	9/2/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy
92417.04	MW-6	9/2/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy
92417.05	MW-6D	9/2/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy
92417.06	MW-2	9/2/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy
92417.07	MW-4	9/2/10	9/1/10	aqueous		Adheres to Sample Acceptance Policy
92417.08	MW-4D	9/2/10	9/2/10	aqueous		Adheres to Sample Acceptance Policy
92417.09	MW-3D	9/2/10	9/2/10	aqueous		Adheres to Sample Acceptance Policy
92417.1	DP-2	9/2/10	9/2/10	aqueous		Adheres to Sample Acceptance Policy
92417.11	MW-3	9/2/10	9/2/10	aqueous		Adheres to Sample Acceptance Policy
92417.12	EB-1	9/2/10	9/2/10	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 2nd edition, 1992

eastern analytical, inc.

www.eailabs.com

Phone: (603) 228-0525



LABORATORY REPORT

Eastern Analytical, Inc. ID#: **92417**

Client: **The Johnson Company**

Client Designation: **Jard | 3-2218-3**

Sample ID:	MW-1	EPA-10	DP-1	MW-6	MW-6D	MW-2
Lab Sample ID:	92417.01	92417.02	92417.03	92417.04	92417.05	92417.06
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10
Date Received:	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10
Date of Analysis:	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10
Analyst:	JMR	JMR	JMR	JMR	JMR	JMR
Method:	8270D	8270D	8270D	8270D	8270D	8270D
Dilution Factor:	1	1	1	1	1	1
bis(2-Ethylhexyl)phthalate	< 5	< 5	< 5	< 5	45	< 5
Nitrobenzene-D5 (surr)	79 %R	79 %R	74 %R	79 %R	79 %R	78 %R
2-Fluorobiphenyl (surr)	80 %R	82 %R	74 %R	79 %R	77 %R	81 %R
p-Terphenyl-D14 (surr)	87 %R	85 %R	81 %R	85 %R	85 %R	86 %R



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 92417

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Sample ID:	MW-4	MW-4D	MW-3D	DP-2	MW-3	EB-1
Lab Sample ID:	92417.07	92417.08	92417.09	92417.1	92417.11	92417.12
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	9/1/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Date Received:	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10
Date of Analysis:	9/3/10	9/3/10	9/7/10	9/3/10	9/7/10	9/3/10
Analyst:	JMR	JMR	JMR	JMR	JMR	JMR
Method:	8270D	8270D	8270D	8270D	8270D	8270D
Dilution Factor:	1	1	1	1	10	1
bis(2-Ethylhexyl)phthalate	< 5	< 5	70	71	450	< 5
Nitrobenzene-D5 (surr)	76 %R	79 %R	73 %R	80 %R	89 %R	80 %R
2-Fluorobiphenyl (surr)	81 %R	88 %R	78 %R	86 %R	114 %R	87 %R
p-Terphenyl-D14 (surr)	83 %R	85 %R	76 %R	86 %R	116 %R	85 %R



QC REPORT

Eastern Analytical, Inc. ID#: 92417

Batch ID: 734018-43111/A090310BaseN1

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
bis(2-Ethylhexyl)phthalate	< 5	19 (77 %R)	19 (76 %R) (1 RPD)	9/3/2010	ug/l	40 - 140	20	8270D
Nitrobenzene-D5 (surr)	79 %R	80 %R	81 %R	9/3/2010	% Rec	35 - 114	20	8270D
2-Fluorobiphenyl (surr)	72 %R	82 %R	81 %R	9/3/2010	% Rec	43 - 116	20	8270D
p-Terphenyl-D14 (surr)	86 %R	93 %R	94 %R	9/3/2010	% Rec	33 - 130	20	8270D

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
* Flagged analyte recoveries deviated from the QA/QC limits.



LABORATORY REPORT

Eastern Analytical, Inc. ID#: **92417**

Client: **The Johnson Company**

Client Designation: **Jard | 3-2218-3**

Sample ID:	MW-1	EPA-10	DP-1	MW-6	MW-6D	MW-2
Lab Sample ID:	92417.01	92417.02	92417.03	92417.04	92417.05	92417.06
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10	9/1/10
Date Received:	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10
Date of Analysis:	9/7/10	9/7/10	9/7/10	9/7/10	9/7/10	9/7/10
Analyst:	JW	JW	JW	JW	JW	JW
Method:	8082	8082	8082	8082	8082	8082
Dilution Factor:	1	1	1	1	1	1
PCB-1016	0.7	0.7	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1221	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1232	< 0.5	< 0.5	11	12	25	< 0.5
PCB-1242	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1248	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1254	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
PCB-1260	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TMX (surr)	94 %R	86 %R	83 %R	85 %R	83 %R	90 %R
DCB (surr)	99 %R	88 %R	110 %R	99 %R	85 %R	103 %R

Samples MW-1 and EPA-10: The sample contains more of the heavier Aroclor 1016 congeners than what would normally be expected. The concentration of Aroclor 1016 may be underestimated. Refer to the sample chromatogram overlay for more details.

Samples DP-1 and MW-6: The samples were re-analyzed at a dilution factor of 2 for Aroclor 1232 on 9/8/10.

Sample MW-6D was re-analyzed at a dilution factor of 5 for Aroclor 1232 on 9/8/10.



LABORATORY REPORT

Eastern Analytical, Inc. ID#: **92417**

Client: **The Johnson Company**

Client Designation: **Jard | 3-2218-3**

Sample ID:	MW-4	MW-4D	MW-3D	DP-2	MW-3	EB-1
Lab Sample ID:	92417.07	92417.08	92417.09	92417.1	92417.11	92417.12
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	9/1/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Date Received:	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10	9/2/10
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Extraction/Prep:	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10	9/3/10
Date of Analysis:	9/8/10	9/8/10	9/8/10	9/8/10	9/8/10	9/8/10
Analyst:	JW	JW	JW	JW	JW	JW
Method:	8082	8082	8082	8082	8082	8082
Dilution Factor:	1	1	20	20	2000	1
PCB-1016	< 0.5	< 0.5	< 10	< 10	< 1000	< 0.5
PCB-1221	< 0.5	< 0.5	< 10	< 10	< 1000	< 0.5
PCB-1232	< 0.5	< 0.5	110	100	14000	< 0.5
PCB-1242	< 0.5	< 0.5	< 10	< 10	< 1000	< 0.5
PCB-1248	< 0.5	< 0.5	< 10	< 10	< 1000	< 0.5
PCB-1254	< 0.5	< 0.5	< 10	< 10	< 1000	< 0.5
PCB-1260	< 0.5	< 0.5	< 10	< 10	< 1000	< 0.5
TMX (surr)	84 %R	90 %R	109 %R	92 %R	109 %R	75 %R
DCB (surr)	95 %R	109 %R	124 %R	113 %R	104 %R	80 %R



QC REPORT

Eastern Analytical, Inc. ID#: 92417

Batch ID: 734018-55012/A090310PCB1

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.5	4.1 (103 %R)	4.0 (100 %R) (3 RPD)	9/7/2010	ug/l	40 - 140	20	8082
PCB-1221	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/7/2010	ug/l	40 - 140	20	8082
PCB-1232	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/7/2010	ug/l	40 - 140	20	8082
PCB-1242	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/7/2010	ug/l	40 - 140	20	8082
PCB-1248	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/7/2010	ug/l	40 - 140	20	8082
PCB-1254	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	9/7/2010	ug/l	40 - 140	20	8082
PCB-1260	< 0.5	3.9 (97 %R)	3.7 (93 %R) (4 RPD)	9/7/2010	ug/l	40 - 140	20	8082
TMX (surr)	87 %R	96 %R	91 %R	9/7/2010	% Rec	30 - 150		8082
DCB (surr)	97 %R	110 %R	99 %R	9/7/2010	% Rec	30 - 150		8082

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

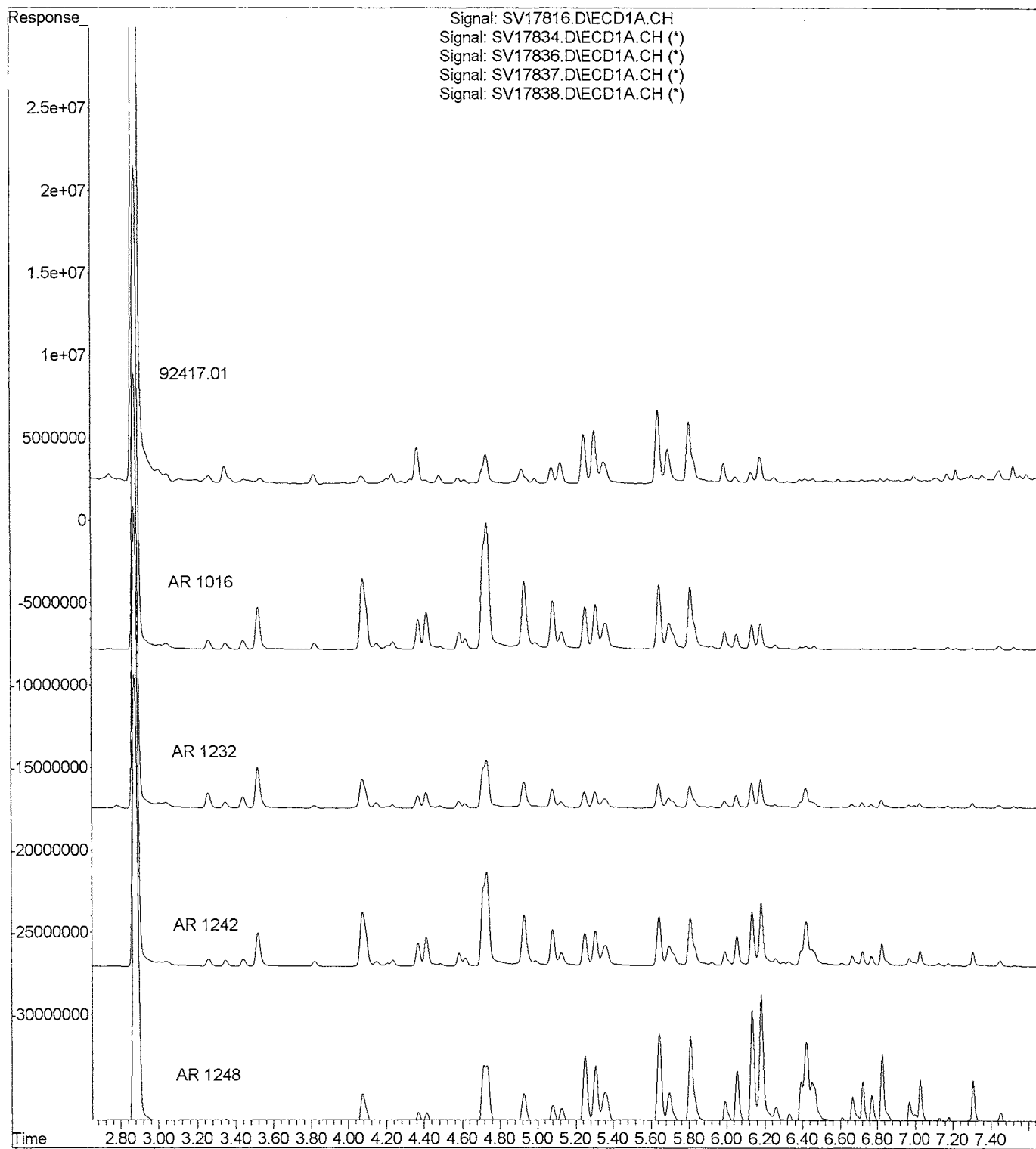
Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

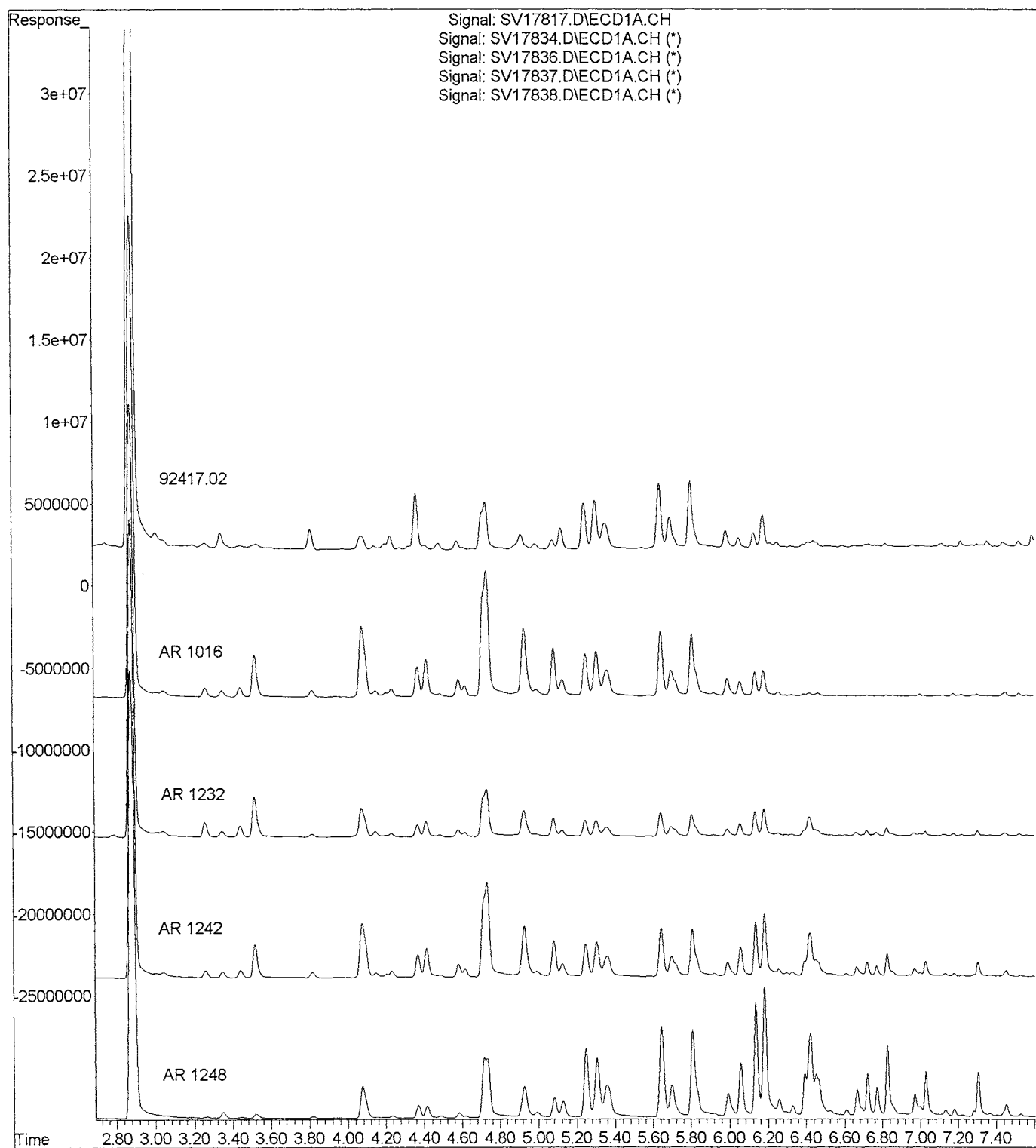
There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.

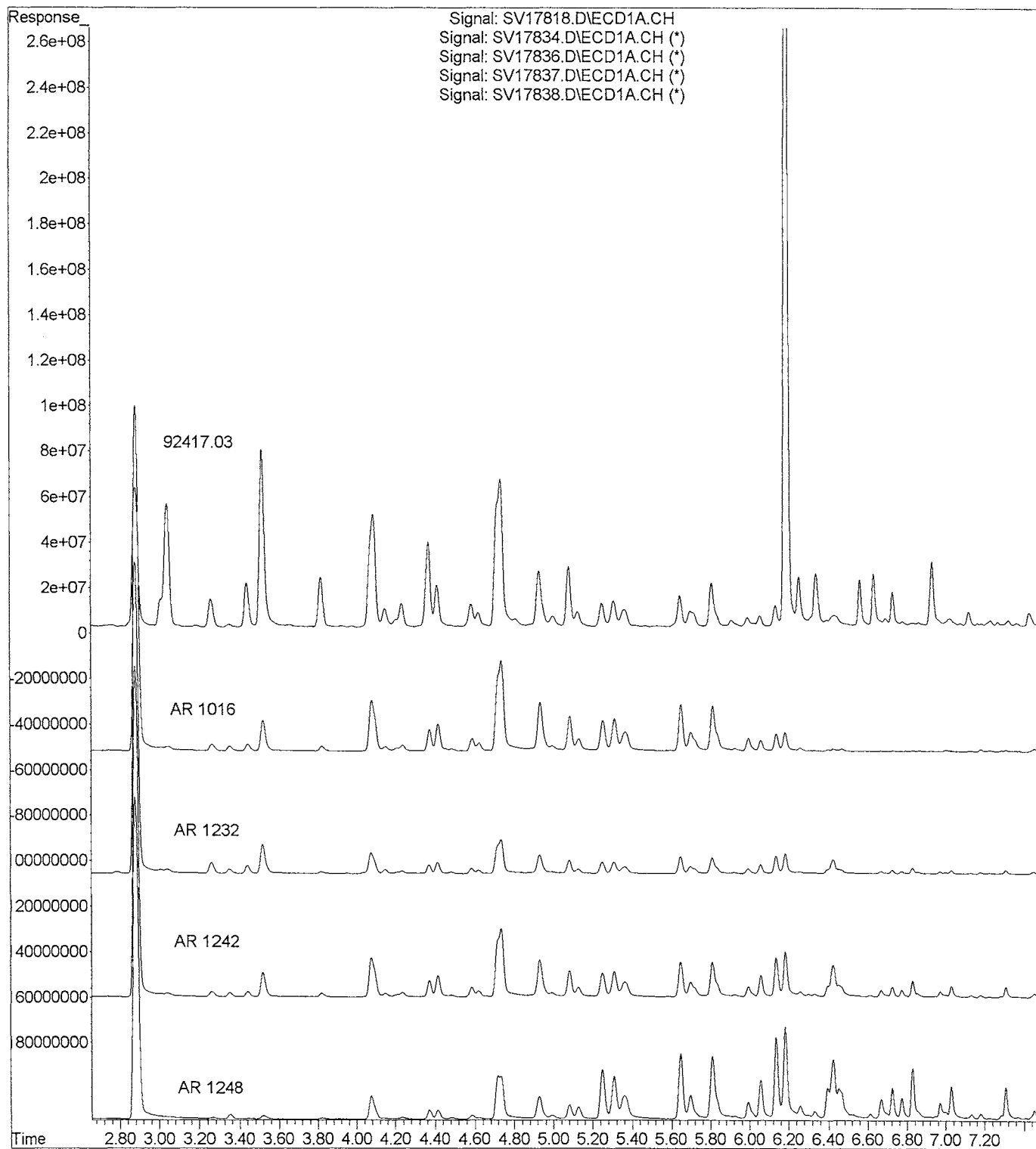
File :C:\msdchem\1\DATA\2010\090710\SV17816.D
Operator : JW
Acquired : 07 Sep 2010 22:39 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92417.01
Misc Info : A090310PCB1
Vial Number: 17



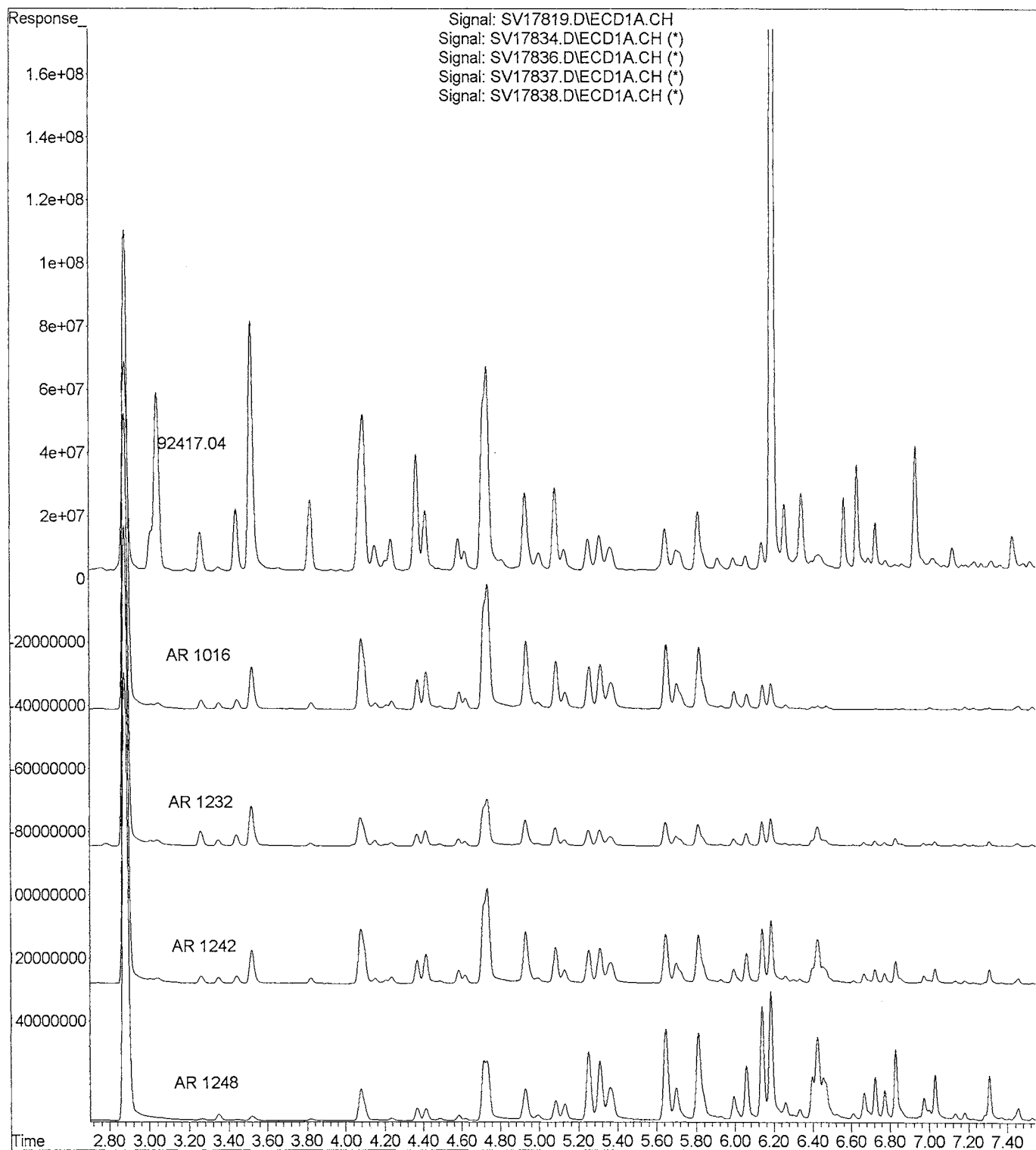
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Operator : JW
Acquired : 07 Sep 2010 22:54 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92417.02
Misc Info : A090310PCB1
Vial Number: 18



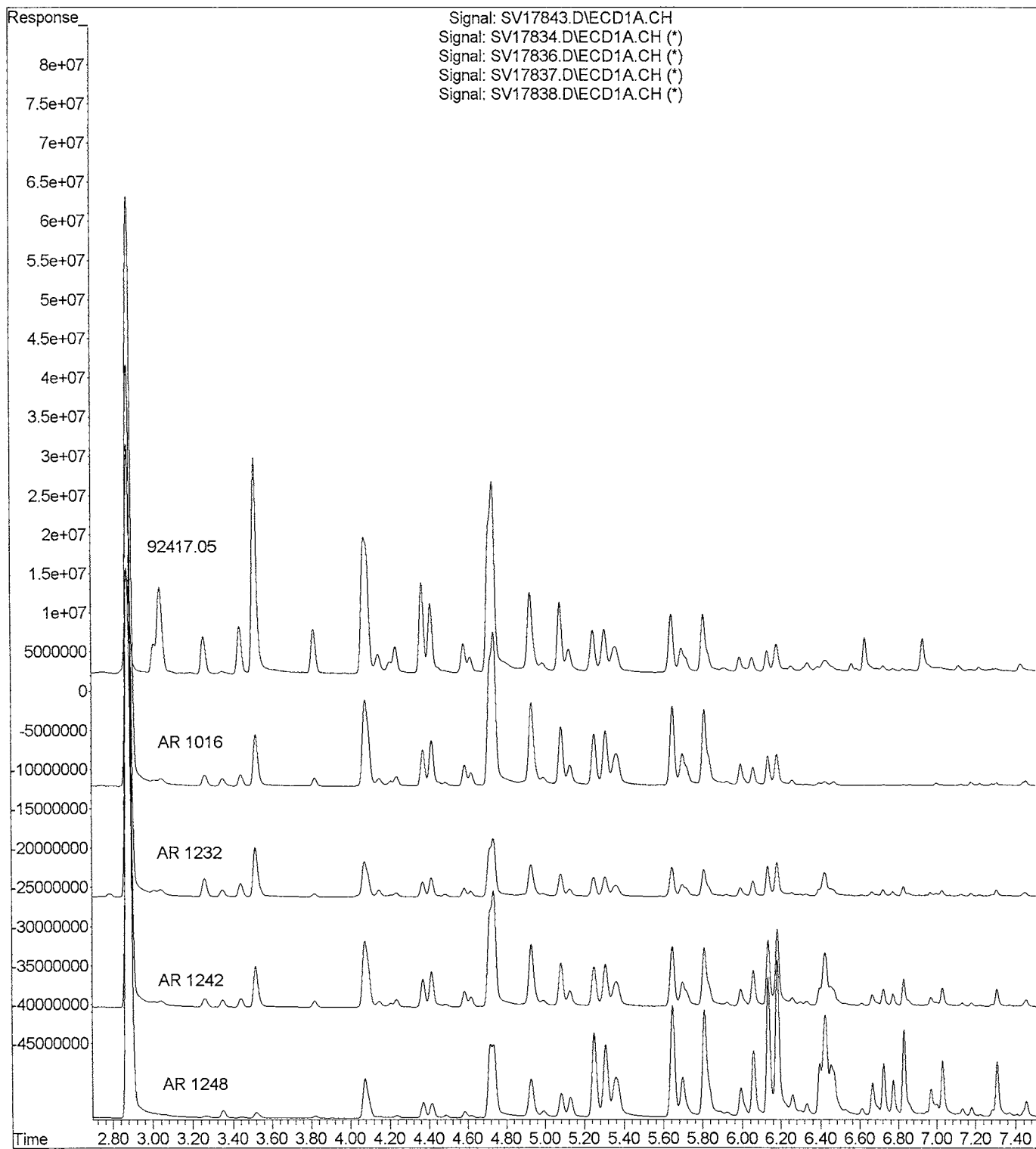
File :C:\msdchem\1\DATA\2010\090710\SV17818.D
Operator : JW
Acquired : 07 Sep 2010 23:09 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92417.03
Misc Info : A090310PCB1
Vial Number: 19



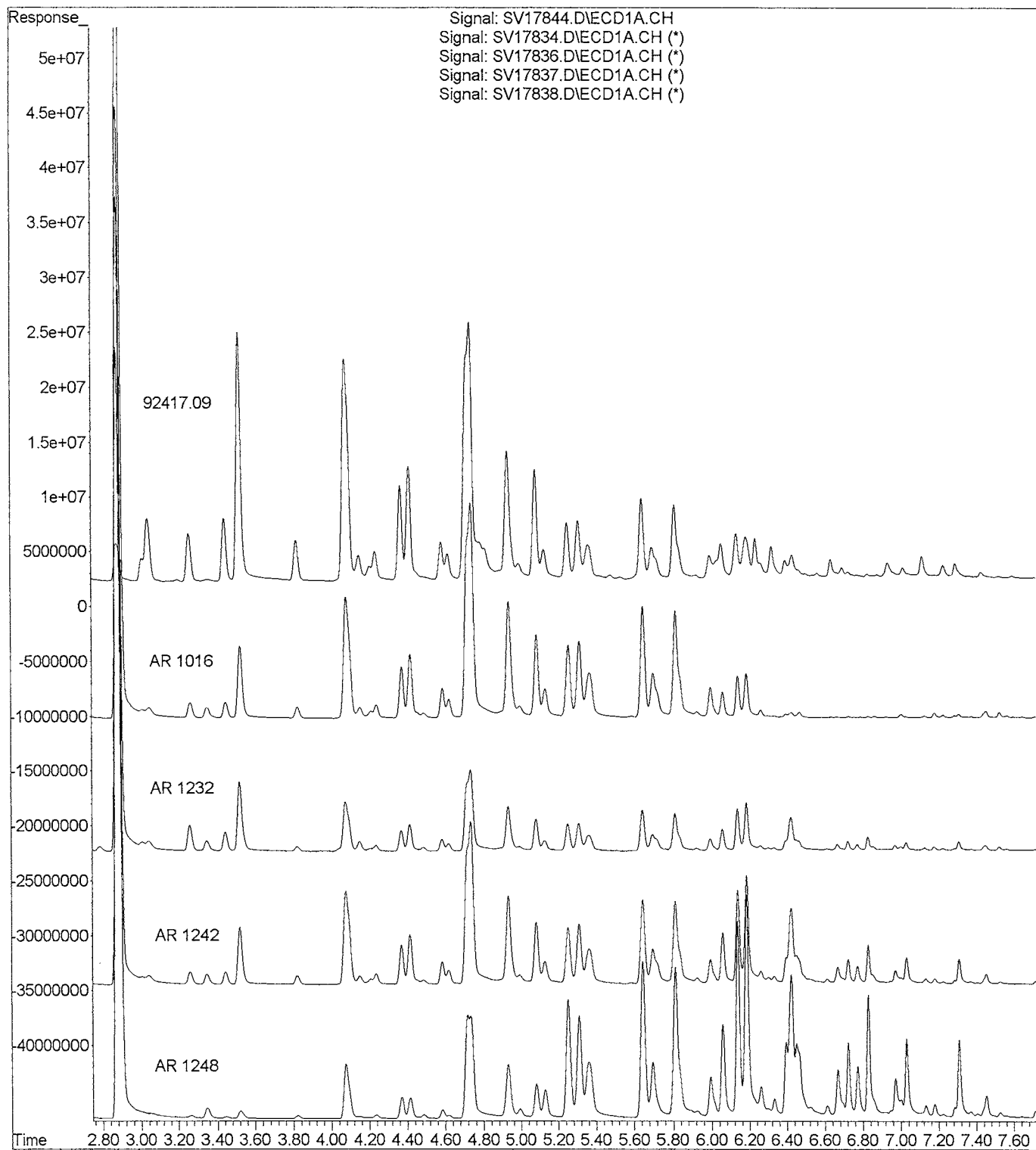
File :C:\msdchem\1\DATA\2010\090710\SV17819.D
Operator : JW
Acquired : 07 Sep 2010 23:24 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92417.04
Misc Info : A090310PCB1
Vial Number: 20



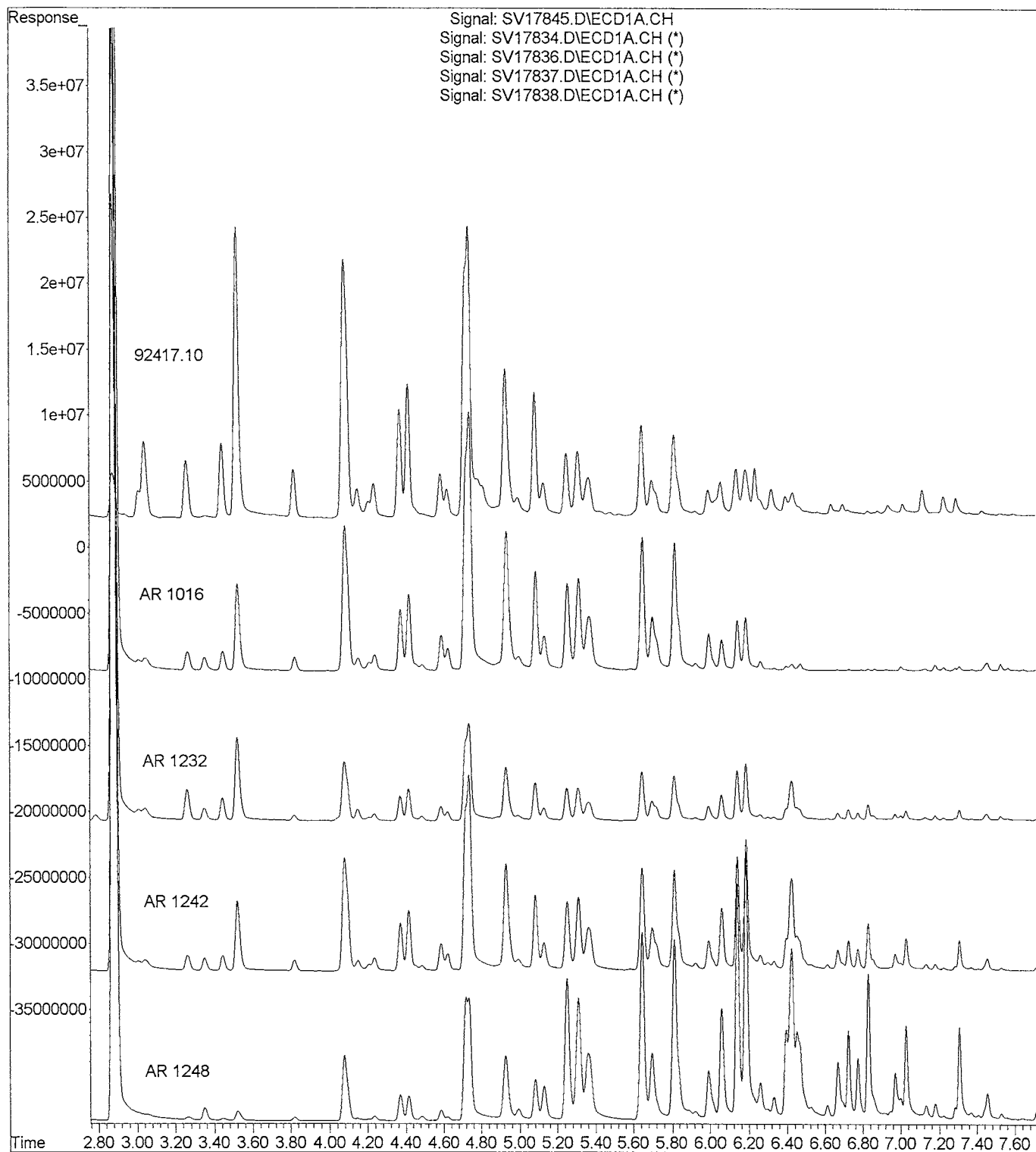
File :C:\msdchem\1\DATA\2010\090710\SV17843.D
Operator : JW
Acquired : 08 Sep 2010 10:27 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92417.05 5X
Misc Info : A090310PCB1
Vial Number: 31



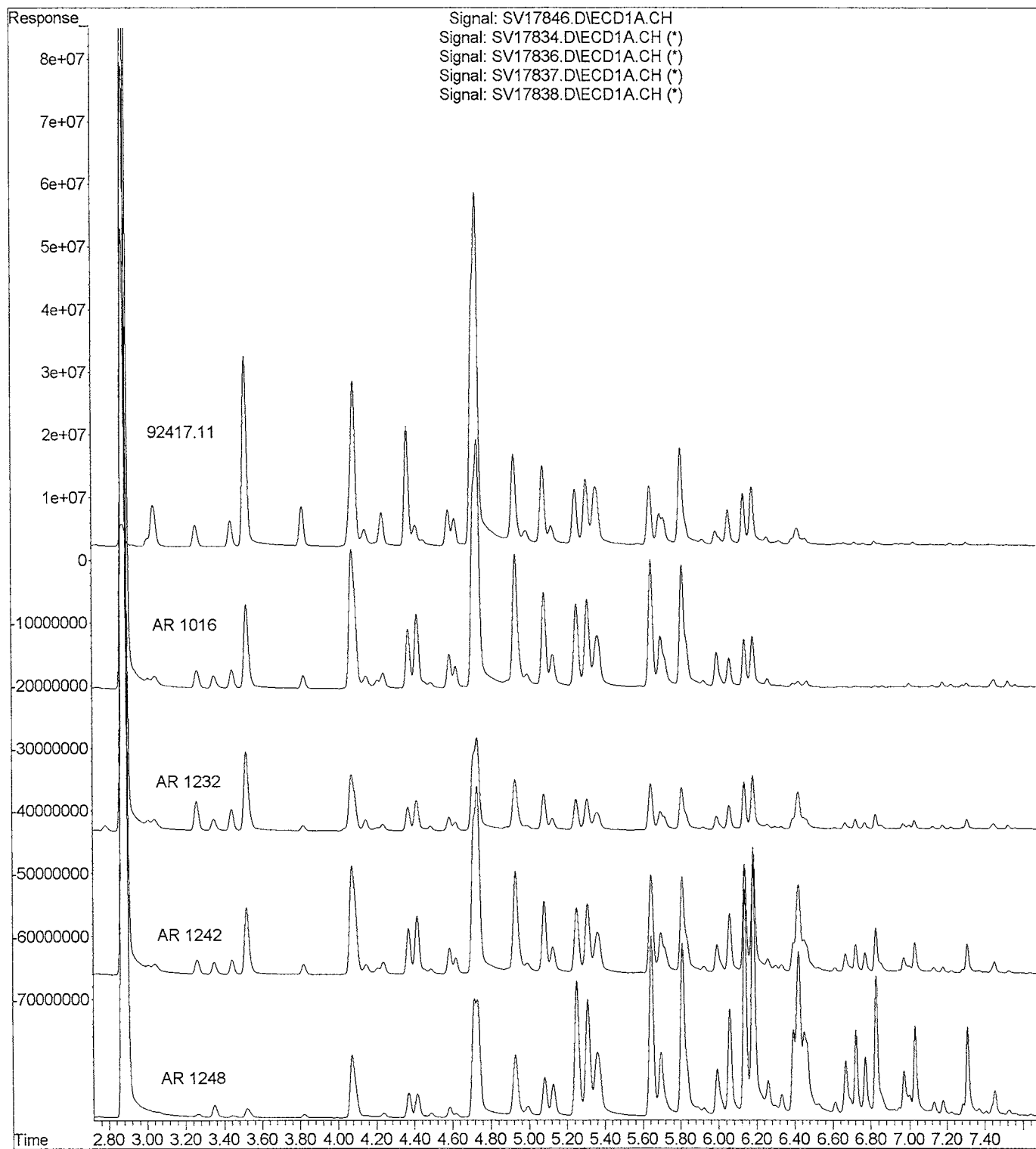
File :C:\msdchem\1\DATA\2010\090710\SV17844.D
Operator : JW
Acquired : 08 Sep 2010 10:42 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92417.09 20X
Misc Info : A090310PCB1
Vial Number: 32



File :C:\msdchem\1\DATA\2010\090710\SV17845.D
Operator : JW
Acquired : 08 Sep 2010 10:57 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92417.10 20X
Misc Info : A090310PCB1
Vial Number: 33



File : C:\msdchem\1\DATA\2010\090710\SV17846.D
Operator : JW
Acquired : 08 Sep 2010 11:12 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92417.11 20X
Misc Info : A090310PCB1
Vial Number: 34





LABORATORY REPORT

Eastern Analytical, Inc. ID#: 92417

Client: The Johnson Company

Client Designation: Jard | 3-2218-3

Sample ID: MW-3

Lab Sample ID: 92417.11

Matrix: aqueous

Date Sampled: 9/2/10

Date Received: 9/2/10

Specific Gravity 0.9769

Analysis

Units	Date	Time	Method	Analyst
None	9/09/10	12:30	2710F	JCC

October 07, 2010

Kathleen Noonan-Kelley
Eastern Analytical, Inc.
25 Chenell Drive
Concord, NH 03301

Amended SR#: E1000965

Project: PCB Analysis – Method 1668A WHO 12 List

Dear Kathleen,

Revised test results are submitted in this amendment. In the original report, the result value for PCB169 was reported as 13300 pg/L. However, after further review, this value was discovered to be an interfering compound and PCB 169 should be reported as non-detected. The Total TEQ value is not significantly altered by this change since the inaccuracy was below the method reporting limit for this compound.

Please replace the paper pages of the original report with the enclosed numbered pages.

Sincerely,
COLUMBIA ANALYTICAL SERVICES, INC

Nicole Brown
Project Manager, GC/HRMS
281-994-2959
nbrown@caslab.com



Certificate of Analysis

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COLUMBIA ANALYTICAL SERVICES, INC

Client: Eastern Analytical, Inc. **Service Request No.:** E1000965
Project: PCB Analysis – Method 1668A WHO 12 List **Date Received:** 09/03/10
Sample Matrix: Water

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water sample was received for analysis at Columbia Analytical Services on 09/03/10.

The following discrepancies were noted upon initial sample inspection: no custody seals on cooler. The exceptions are also noted on the cooler receipt and preservation form included in this data package.

The sample was received at 9°C in good condition and is consistent with the accompanying chain of custody form. Dioxin/furan compounds are stable at room temperature. The sample was stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

B flags – Method Blanks

The Method Blank EQ1000422-01 contained low levels of PCB118 and PCB 105 below the Method Reporting Limit (MRL). The associated compounds in the samples are flagged with 'B' flags.

MS/MSD

EQ1000422: Laboratory Control Spike/Laboratory Control Spike Duplicate (LCS/LCSD) samples were analyzed and reported in lieu of an MS/MSD for this extraction batch. The batch quality control criteria were met.

Y flags – Labeled Standards

Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags on the Labeled Compound summary pages. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.

Approved by  Date 10/06/10

Xiangqiu Liang, Laboratory Director

MRL

The sample MW-3 / E1000965-001 required a dilution due to the presence of elevated levels of target congeners. The undiluted and diluted results were combined into one Total TEQ summary report for each sample. This reports a 'Total' result that includes the most appropriate concentration found for the associated target congener.

For dilutions, we adjust the concentration of the labeled compounds to 100pg/uL in the extract, as required in Section 17.5 of Method 1668A. The clean-up standard concentration is not adjusted with the labeled standards, as the clean-up standard measures the extraction recoveries in the 1:1 extract. Please disregard the recoveries for the clean-up standard in the dilutions.

Additionally, in the original analysis, the poor chromatographic conditions caused one of the Recovery Standards, PCB-52L, to not be detected. As such, percent recoveries of labeled standards PCB-77L and PCB-81L were unable to be calculated. Quantitation of the target compounds was not affected, however. The Spike Conc. values in the dilution report are calculated relative to the recovery of the labeled standard in the original analysis, and therefore could not be calculated.

K flags

EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.

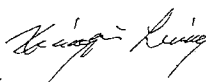
Detection Limits

Detection limits are calculated for each congener in each sample by measuring the height of the noise level for each quantitation ion for the associated labeled standard. The concentration equivalent to 2.5 times the height of the noise is then calculated using the appropriate response factor and the weight of the sample. The calculated concentration equals the detection limit.

The TEQ Summary results for each sample have been calculated by CAS/Houston to include:

- WHO-2005 TEFs, The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds (M. Van den Berg et al., Toxicological Sciences 93(2):223-241, 2006)
- Non-detected compounds are not included in the 'Total'
- The 1:1 and associated dilution have been combined into one TEQ Summary report

Approved by _____



Date 10/06/10

Xiangqiu Liang, Laboratory Director

Client: Eastern Analytical, Inc.
Project: PCB Analysis - Method 1668A WHO 12 List

Service Request: E1000965

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
E1000965-001	MW-3	9/2/10	10:27

Laboratory Certifications 2010-2011

STATE/PROGRAM	AGENCY	CERTIFICATION ID	EXP DATE
ARIZONA	AZ-DHS	AZ0725	05/27/11
ARKANSAS	ADEQ	10-035-0	06/16/11
CALIFORNIA	CA-ELAP	2452	02/28/11
DoD ELAP	A2LA	2897.01	11/30/11
FLORIDA/NELAP	FL-DOHS	E87611	06/30/11
HAWAII	HI-DOH	N/A	06/30/11
ILLINOIS/NELAP	IL-EPA	002611	10/06/11
ISO 17025	A2LA	2897.01	11/30/11
LOUISIANA/NELAP	LELAP	03048	06/30/11
LOUISIANA/NELAP	LDHH	LA100032	12/31/10
MAINE	ME-DOHS	2010041	06/05/12
MICHIGAN	MIDEQ	9971	06/30/11
MINNESOTA	MDH	048-999-427	12/31/10
NEVADA	NDEP	TX014112010A	07/31/10
NEW JERSEY	NJDEP	TX008	06/30/11
NEW MEXICO	NMED-DWB	N/A	06/30/11
NEW YORK/NELAP	NY-DOH	11707	04/01/11
OKLAHOMA	OKDEQ	2009-25	08/31/10
OREGON/NELAP	ORELAP	TX200002-006	03/24/10
PENNSYLVANIA/NELAP	PLAP	002	06/30/11
TENNESSEE	TNDEC	04016	06/30/11
TEXAS/NELAP	TCEQ	T104704216-10-1	06/30/11
UTAH/NELAP	UTELCP	COLU2	06/30/11
SOIL IMPORT PERMIT	USDA	P330-09-00067	03/27/12
WASHINGTON/NELAP	WA-Ecology	C1855	11/14/10
WEST VIRGINIA	WVDEP	347	06/30/11

Abbreviations, Acronyms & Definitions

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
MRL	Method Reporting Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent Recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
RRT	Relative Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-Noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

Data Qualifier Flags – PCB Congeners

- **B** Indicates the associated analyte is found in the method blank, as well as in the sample
- **E** Indicates an estimated value – used when the analyte concentration exceeds the upper end of the linear calibration range
- **J** Indicates an estimated value – used when the analyte concentration is below the method reporting limit (MRL) and above the estimated detection limit (EDL)
- **K** EMPC - When the ion abundance ratios associated with a particular compound are outside the QC limits, samples are flagged with a 'K' flag. A 'K' flag indicates an estimated maximum possible concentration for the associated compound.
- **U** Indicates the compound was analyzed and not detected
- **Y** Samples that had recoveries of labeled standards outside the acceptance limits are flagged with 'Y' flags. In all cases, the signal-to-noise ratios are greater than 10:1, making these data acceptable.
- **ND** Indicates concentration is reported as 'Not Detected'
- **S** Peak is saturated; data not reportable
- **Q** Lock-mass interference by ether compounds
- **X** See case narrative

COLUMBIA ANALYTICAL SERVICES, INC. – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID

E1000965

DB-5

DB-225

SPB-Octyl

First Level - Data Processing - to be filled by person generating the forms

Date:

Analyst:

Samples:

09/23/10

LL

-001

Second Level - Data Review – to be filled by person doing peer review

Date:

10/01/10

Analyst:

PR

Samples:

001

COLUMBIA ANALYTICAL SERVICES, INC. – Houston
Data Processing/Form Production and Peer Review Signatures

SR# Unique ID

E1000965

DB-5

DB-225

SPB-Octy

First Level - Data Processing - to be filled by person generating the forms

Date: 09/27/10

Analyst: JB

Samples: 001DL

Second Level - Data Review – to be filled by person doing peer review

Date: 9/30/10

Analyst: JB

Samples: 001DL



Analytical Results

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Eastern Analytical, Inc.
Project: PCB Analysis - Method 1668A WHO 12 List
Sample Matrix: Water
Sample Name: MW-3
Lab Code: E1000965-001

Service Request: E1000965
Date Collected: 9/ 2/10 1027
Date Received: 9/ 3/10
Units: pg/L
Basis: NA

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 160mL
Data File Name: U223742
ICAL Date: 10/19/09

Date Analyzed: 9/15/10 1347
Date Extracted: 9/7/10
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U223825
Cal Ver. File Name: U223737

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 81	791000		18300	18300	0.81	1.000	1
PCB 77	16700000	E	21800	21800	0.81	1.001	1
PCB 123	640000		4820	15600	1.56	1.000	1
PCB 118	14900000	BE	5070	15600	1.53	1.000	1
PCB 114	893000		4750	15600	1.57	1.000	1
PCB 105	10800000	BE	5360	6250	1.56	1.000	1
PCB 126	91800		6240	15600	1.58	1.000	1
PCB 167	113000		1240	15600	1.27	1.001	1
PCBs 156 + 157	412000		1880	15600	1.25	1.000	1
PCB 169	ND	U	1850	15600			1
PCB 189	11000	J	883	15600	1.01	1.000	1

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
PCB 81L	10000	0	0	Y	25-150	0.81	
PCB 77L	10000	0	0	Y	25-150	0.80	
PCB 123L	10000	7183.917	72		25-150	1.55	1.133
PCB 118L	10000	7334.700	73		25-150	1.56	1.143
PCB 114L	10000	7799.749	78		25-150	1.61	1.159
PCB 105L	10000	7280.629	73		25-150	1.47	1.178
PCB 126L	10000	6552.472	66		25-150	1.63	1.268
PCB 167L	10000	5499.563	55		25-150	1.28	1.071
PCBs 156L + 157L	20000	10885.616	54		25-150	1.27	1.099
PCB 169L	10000	4521.463	45		25-150	1.34	1.176
PCB 189L	10000	6948.125	69		25-150	1.06	0.962
PCB 111L	10000	8688.606	87		30-135	1.50	1.076
PCB 178L	10000	8216.587	82		30-135	1.02	1.010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Eastern Analytical, Inc.
Project: PCB Analysis - Method 1668A WHO 12 List
Sample Matrix: Water
Sample Name: MW-3
Lab Code: E1000965-001

Service Request: E1000965
Date Collected: 9/ 2/10 1027
Date Received: 9/ 3/10
Units: pg/L
Basis: NA

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method

Analyte Name	Result	DL	Dilution Factor	TEF	TEF - Adjusted Concentration
PCB 81	791000	18300	1	0.0003	237
PCB 77	23700000	135000	20	0.0001	2370
PCB 123	640000	4820	1	0.00003	19.2
PCB 118	19500000	14300	20	0.00003	585
PCB 114	893000	4750	1	0.00003	26.8
PCB 105	13600000	15700	20	0.00003	408
PCB 126	91800	6240	1	0.1	9180
PCB 167	113000	1240	1	0.00003	3.39
PCBs 156 + 157	412000	1880	1	0.00003	12.4
PCB 169	ND	1850	1	0.03	
PCB 189	11000	883	1	0.00003	0.330
Total TEQ					12800

2005 WHO TEFs, ND = 0

Analytical Report

Client: Eastern Analytical, Inc.
 Project: PCB Analysis - Method 1668A WHO 12 List
 Sample Matrix: Water
 Sample Name: MW-3
 Lab Code: E1000965-001

Service Request: E1000965
 Date Collected: 9/ 2/10 1027
 Date Received: 9/ 3/10
 Units: pg/L
 Basis: NA

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
 Prep Method: Method
 Sample Amount: 160mL
 Data File Name: U223774
 ICAL Date: 10/19/09

Date Analyzed: 9/22/10 2104
 Date Extracted: 9/7/10
 Instrument Name: E-HRMS-02
 GC Column: SPB-OCTYL
 Blank File Name: U223825
 Cal Ver. File Name: U223765

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 81	978000		142000	313000	0.79	1.001	20
PCB 77	23700000		135000	313000	0.79	1.000	20
PCB 123	699000		16000	313000	1.55	1.000	20
PCB 118	19500000 B		14300	313000	1.60	1.000	20
PCB 114	1070000		15000	313000	1.62	1.000	20
PCB 105	13600000 B		15700	125000	1.56	1.001	20
PCB 126	130000 J		19300	313000	1.64	1.001	20
PCB 167	165000 J		1980	313000	1.29	1.000	20
PCBs 156 + 157	611000		2920	313000	1.25	1.000	20
PCB 169	ND U		2820	313000			20
PCB 189	13800 J		2440	313000	1.02	1.000	20

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
PCB 81L	Infinity	9578.914	0	Y	25-150	0.80	1.332
PCB 77L	Infinity	10130.489	0	Y	25-150	0.82	1.353
PCB 123L	13900	9504.432	68		25-150	1.55	1.137
PCB 118L	13700	9941.211	73		25-150	1.63	1.146
PCB 114L	12800	9397.304	73		25-150	1.61	1.162
PCB 105L	13700	9949.192	73		25-150	1.60	1.181
PCB 126L	15200	11292.193	75		25-150	1.58	1.273
PCB 167L	18200	8529.924	47		25-150	1.29	1.071
PCBs 156L + 157L	37000	18545.068	50		25-150	1.27	1.099
PCB 169L	22200	9648.826	43		25-150	1.26	1.176
PCB 189L	14500	8655.668	60		25-150	1.04	0.962
PCB 111L	11500	389.144	3	Y	30-135	1.55	1.078
PCB 178L	12200	370.042	3	Y	30-135	1.07	1.010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Eastern Analytical, Inc.
 Project: PCB Analysis - Method 1668A WHO 12 List
 Sample Matrix: Water
 Sample Name: Method Blank
 Lab Code: EQ1000422-01

Service Request: E1000965
 Date Collected: NA
 Date Received: NA
 Units: pg/L
 Basis: NA

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
 Prep Method: Method
 Sample Amount: 1000mL
 Data File Name: U223825
 ICAL Date: 10/19/09

Date Analyzed: 9/30/10 1948
 Date Extracted: 9/7/10
 Instrument Name: E-HRMS-02
 GC Column: SPB-OCTYL
 Blank File Name: U223825
 Cal Ver. File Name: U223823

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 81	ND	U	4.27	2500			1
PCB 77	ND	U	4.41	2500			1
PCB 123	ND	U	5.81	2500			1
PCB 118	27.7	J	5.34	2500	1.44	1.001	1
PCB 114	ND	U	5.66	2500			1
PCB 105	9.69	J	5.94	1000	1.36	1.001	1
PCB 126	ND	U	5.26	2500			1
PCB 167	ND	U	2.89	2500			1
PCBs 156 + 157	ND	U	4.12	2500			1
PCB 169	ND	U	3.09	2500			1
PCB 189	ND	U	4.95	2500			1

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
PCB 81L	10000	9364.242	94		25-150	0.79	1.332
PCB 77L	10000	9583.225	96		25-150	0.78	1.353
PCB 123L	10000	8432.404	84		25-150	1.57	1.136
PCB 118L	10000	8578.580	86		25-150	1.56	1.146
PCB 114L	10000	8271.310	83		25-150	1.58	1.162
PCB 105L	10000	8561.545	86		25-150	1.59	1.182
PCB 126L	10000	10215.666	102		25-150	1.53	1.272
PCB 167L	10000	8111.954	81		25-150	1.31	1.071
PCBs 156L + 157L	20000	17535.704	88		25-150	1.25	1.099
PCB 169L	10000	9178.241	92		25-150	1.29	1.176
PCB 189L	10000	8152.773	82		25-150	1.03	0.962
PCB 111L	10000	8687.090	87		30-135	1.56	1.078
PCB 178L	10000	8067.927	81		30-135	1.03	1.010



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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Eastern Analytical, Inc.
 Project: PCB Analysis - Method 1668A WHO 12 List
 Sample Matrix: Water

Service Request: E1000965
 Date Analyzed: 9/15/10

Lab Control Sample Summary
 Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
 Prep Method: Method

Units: pg/L
 Basis: NA

Extraction Lot: 118668

Analyte Name	Lab Control Sample EQ1000422-02			Duplicate Lab Control Sample EQ1000422-03			% Rec Limits	RPD	RPD Limit
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
PCB 81	6090	5000	122	6010	5000	120	50 - 150	2	50
PCB 77	6000	5000	120	6100	5000	122	50 - 150	2	50
PCB 123	5950	5000	119	5850	5000	117	50 - 150	2	50
PCB 118	5620	5000	112	5590	5000	112	50 - 150	<1	50
PCB 114	5830	5000	117	5730	5000	115	50 - 150	2	50
PCB 105	6000	5000	120	5900	5000	118	50 - 150	2	50
PCB 126	5720	5000	114	5710	5000	114	50 - 150	<1	50
PCB 167	6260	5000	125	6160	5000	123	50 - 150	2	50
PCBs 156 + 157	12100	10000	121	11900	10000	119	50 - 150	2	50
PCB 169	6220	5000	124	6150	5000	123	50 - 150	<1	50
PCB 189	6210	5000	124	6200	5000	124	50 - 150	<1	50

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Eastern Analytical, Inc.
Project: PCB Analysis - Method 1668A WHO 12 List
Sample Matrix: Water
Sample Name: Lab Control Sample
Lab Code: EQ1000422-02

Service Request: E1000965
Date Collected: NA
Date Received: NA
Units: pg/L
Basis: NA

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 1000mL
Data File Name: U223738
ICAL Date: 10/19/09

Date Analyzed: 9/15/10 0916
Date Extracted: 9/7/10
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U223825
Cal Ver. File Name: U223737

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 81	6090		4.87	2500	0.79	1.000	1
PCB 77	6000		4.89	2500	0.78	1.000	1
PCB 123	5950		31.9	2500	1.56	1.000	1
PCB 118	5620		30.1	2500	1.54	1.000	1
PCB 114	5830		32.1	2500	1.57	1.001	1
PCB 105	6000		33.2	1000	1.56	1.001	1
PCB 126	5720		29.6	2500	1.58	1.001	1
PCB 167	6260		11.8	2500	1.27	1.000	1
PCBs 156 + 157	12100		17.4	2500	1.26	1.000	1
PCB 169	6220		12.8	2500	1.28	1.000	1
PCB 189	6210		4.68	2500	1.01	1.000	1

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
PCB 81L	10000	8183.154	82		25-150	0.79	1.332
PCB 77L	10000	8679.799	87		25-150	0.79	1.353
PCB 123L	10000	7227.653	72		25-150	1.57	1.137
PCB 118L	10000	7387.298	74		25-150	1.54	1.146
PCB 114L	10000	7082.153	71		25-150	1.57	1.162
PCB 105L	10000	7242.533	72		25-150	1.58	1.181
PCB 126L	10000	8745.445	87		25-150	1.58	1.272
PCB 167L	10000	6123.170	61		25-150	1.29	1.071
PCBs 156L + 157L	20000	13008.641	65		25-150	1.29	1.099
PCB 169L	10000	6901.809	69		25-150	1.24	1.176
PCB 189L	10000	7430.172	74		25-150	1.03	0.962
PCB 111L	10000	8867.372	89		30-135	1.55	1.078
PCB 178L	10000	8520.559	85		30-135	1.04	1.010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Eastern Analytical, Inc.
Project: PCB Analysis - Method 1668A WHO 12 List
Sample Matrix: Water
Sample Name: Duplicate Lab Control Sample
Lab Code: EQ1000422-03

Service Request: E1000965
Date Collected: NA
Date Received: NA
Units: pg/L
Basis: NA

Chlorinated Biphenyl Congeners by HRGC/HRMS

Analytical Method: 1668A
Prep Method: Method
Sample Amount: 1000mL
Data File Name: U223739
ICAL Date: 10/19/09

Date Analyzed: 9/15/10 1022
Date Extracted: 9/7/10
Instrument Name: E-HRMS-02
GC Column: SPB-OCTYL
Blank File Name: U223825
Cal Ver. File Name: U223737

Analyte Name	Result	Q	EDL	MRL	Ion Ratio	RRT	Dilution Factor
PCB 81	6010		2.51	2500	0.80	1.000	1
PCB 77	6100		2.62	2500	0.79	1.000	1
PCB 123	5850		102	2500	1.55	1.000	1
PCB 118	5590		96.1	2500	1.51	1.000	1
PCB 114	5730		98.8	2500	1.57	1.001	1
PCB 105	5900		101	1000	1.57	1.000	1
PCB 126	5710		93.1	2500	1.54	1.000	1
PCB 167	6160		5.49	2500	1.26	1.000	1
PCBs 156 + 157	11900		7.75	2500	1.26	1.000	1
PCB 169	6150		5.81	2500	1.28	1.000	1
PCB 189	6200		4.18	2500	1.00	1.001	1

Labeled Compounds	Spike Conc.(pg)	Conc. Found (pg)	%Rec	Q	Control Limits	Ion Ratio	RRT
PCB 81L	10000	8659.064	87		25-150	0.80	1.332
PCB 77L	10000	8899.680	89		25-150	0.78	1.353
PCB 123L	10000	7523.436	75		25-150	1.56	1.137
PCB 118L	10000	7673.734	77		25-150	1.55	1.146
PCB 114L	10000	7487.539	75		25-150	1.58	1.162
PCB 105L	10000	7762.373	78		25-150	1.58	1.181
PCB 126L	10000	9468.703	95		25-150	1.56	1.272
PCB 167L	10000	6860.543	69		25-150	1.24	1.071
PCBs 156L + 157L	20000	14758.510	74		25-150	1.27	1.099
PCB 169L	10000	7785.819	78		25-150	1.26	1.176
PCB 189L	10000	7691.377	77		25-150	1.02	0.962
PCB 111L	10000	9800.220	98		30-135	1.58	1.078
PCB 178L	10000	9847.183	98		30-135	1.02	1.010



Chain of Custody

19408 Park Row, Suite 320, Houston, TX 77084

Phone (713)266-1599 Fax (713)266-0130

www.caslab.com

An Employee Owned Company

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

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Sample ID	Date Sampled	Matrix	aParameters	Sample Notes
MW-3	9/2/2010 10:27	aqueous	Chlorinated Biphenyl Congeners by HRGC/HRMS Method 1668A	

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EAI SRB# 92417

Project State: VT

Project ID: 2480

Company CAS (TX) Columbia Analytical

Address 19408 Park Row; Suite 320

Address Houston, TX 77084

Account #

Phone # 713-266-1599

Fax Number 713-266-0130

Eastern Analytical, Inc. 25 Chenell Dr. Concord, NH 03301

Results Needed by: Preferred date

Std

QC Deliverables

☐ A ☐ A+ ☒ B ☐ B+ ☐ C ☐ PC

Notes about project

continue with analysis per
client instructions 9/2/10

Eastern Analytical Inc. PO Number 25919

Call if RUSH surcharges will be applied.

Email Final Signed Report PDF and Invoice PDF To:

customerservice@eailabs.com

Samples Collected by:

Chenell Johnson 9/2/10 1530 UPS

Relinquished by

Date/Time

Received by

9/3/10

Relinquished by

Date/Time

Received by

9/5/10

Fax: (603)228-4591

Phone: (603)228-0525 1-800-287-0525

9°C

TK# 1ZX46599015499731
9/11/10

HRS Reference #65

Columbia Analytical Services, Inc.
Cooler Receipt Form

Client/Project: Eastern Analytical Service Request: E1000965
Received: 9/3/10; 0914 Opened (Date/Time): 9/3/10; 0917 By: CD for EB

1. Samples were received via? ☐ US Mail ☐ Fedex ☒ UPS ☐ DHL ☐ Courier ☐ Hand Delivered
2. Samples were received in: (circle) ☒ Cooler ☐ Box ☐ Other _____ ☐ NA
3. Were custody seals present on coolers? ☐ Y ☒ N If yes, how many and where? _____
If present, were custody seals intact? ☐ Y ☐ N If present, were they signed and dated? ☐ Y ☐ N
4. Is shipper's air-bill filed? ☐ NA ☐ Y ☒ N If not, record air bill number: 1ZX465990195997312
5. Temperature of cooler(s) upon receipt (°C): 9
6. If applicable, list Chain of Custody numbers: _____
7. Were custody papers properly filled out (ink, signed, etc.)? ☐ NA ☒ Y ☐ N
8. Packing material used: ☐ Inserts ☒ Bubble Wrap ☐ Blue Ice ☒ Wet Ice ☐ Sleeves ☐ Other _____
9. Were the correct types of bottles used for the tests indicated? ☒ Y ☐ N
Did all bottles arrive in good condition (i.e. unbroken, out of temp.)? Indicate in the table below. ☐ Y ☒ N

Sample ID	Bottle Count	Bottle Type	Out of Temp	Broken	Initials
MW-3	1	1 L Amber	<input checked="" type="checkbox"/>	<input type="checkbox"/>	CD
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	

10. Were all bottle labels complete (i.e. analysis, ID, etc.)? ☒ Y ☐ N
Did all bottle labels and tags agree with custody papers? Indicate in the table below. ☒ Y ☐ N

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

11. Additional notes, discrepancies, and resolutions:

Continue with analysis per client instructions. NB 10/05/10 _____

Sample Acceptance Policy

Custody Seals (desirable, mandatory if specified in SAP):

- ✓ On outside of cooler
- ✓ Seals intact, signed and dated

Chain-of-Custody documentation (mandatory):

- ✓ Properly filled out in ink & signed by the client
- ✓ Sign and date the coc for CAS/HOU upon cooler receipt
- ✓ Coc must list method number
- ✓ If no coc was submitted with the samples, complete a CAS/HOU coc for the client

Sample Integrity (mandatory):

- ✓ Sample containers must arrive in good condition (not broken or leaking)
- ✓ Sample IDs on the bottles must match the sample IDs on the coc
- ✓ The correct type of sample bottle must be used for the method requested
- ✓ The correct number of sample containers received must agree with the documentation on the coc
- ✓ The correct sample matrix must appear on the coc
- ✓ An appropriate sample volume or weight must be received

Preservatives (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6°C
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10°C
- ✓ TO-9A air samples can be shipped and stored at ambient temperature, ~23°C, Method 23 samples must be shipped and stored cold, at 0 to 6°C
- ✓ The sample temperature must be recorded on the coc
- ✓ Notify a Project Chemist if any samples are outside the acceptance temperature or have compromised sample integrity – the client must decide re: replacement sample submittal or continue with the analysis
- ✓ pH and chlorine adjustments must be performed as required for the applicable methods

Cooler Receipt Form, CRF (mandatory):

- ✓ Cooler receipt forms must be completed for each coc & SR# and at the time of cooler receipt
- ✓ Sample integrity issues must be documented on the CRF
- ✓ A scan of the carrier and the airbill number must be recorded in CAS LIMS

Sample Integrity Issues/Resolutions (mandatory):

- ✓ Sample integrity issues are documented on the CRF and given to the Project Chemist for resolution with the client
- ✓ Client resolution is documented in writing (typically email or on the CRF) and filed in the project folder(s)

Service Request Summary

Folder #: E1000965
Client Name: Eastern Analytical, Inc.
Project Name: PCB Analysis - Method 1668A WHO 12 List
Project Number:

Report To: Scott Kelley
Eastern Analytical, Inc.
25 Chenell Dr
Concord, NH 03301
Phone Number: 603 228 0525
Cell Number:
Fax Number: 603 228 4591
E-mail: skelley@eailabs.com

Project Chemist: Nicole Brown
Originating Lab: HOUSTON
Logged By: CDONOVAN
Date Received: 9/ 3/10
Internal Due Date: 9/28/10
QAP: 1668 100uL FV
Qualifier Set: CAS Standard
Formset: CAS Standard
Merged?: N
Report to MDL?: Y
P.O. Number:
EDD: No EDD Specified

1 - 1000 mL-Glass Bottle WM AMBER Teflon Liner Unpreserved 40

Location: E-Disposed

CAS Samp No	Client Samp No.	Matrix	Collected	1668A/ CI Biphen Cong	SVM
E1000965-001	MW-3	Water	9/2/10 1027	II	

Folder Comments:

Who 12 list

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	CI Biphen Cong/1668A	1	DL 09/21/10 ASB

Preparation Information Benchsheet

Prep Run#: 118668
Team: Semivoa GCMS/AKODUR

Prep Workflow: OrgExtAq(365)
Prep Method: Method

Status: Prepped
Prep Date/Time: 9/7/10 11:37 AM

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#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Sample Description
1	E1000958-001	2010-5-SW3	.01	1668A/Cl Biphen Cong		Storm Water	880mL	yellow clear liquid
2	E1000965-001	MW-3	.01	1668A/Cl Biphen Cong		Water	160mL	beige peach cloudy liquid
3	EQ1000422-01	MB		1668A/Cl Biphen Cong		Liquid	1000mL	
4	EQ1000422-02	LCS		1668A/Cl Biphen Cong		Liquid	1000mL	
5	EQ1000422-03	DLCS		1668A/Cl Biphen Cong		Liquid	1000mL	

Spiking Solutions

Name:	1668A Clean Up Working Standard	Inventory ID	21263	Logbook Ref:	B3-31-1	Expires On:	09/02/2011
-------	---------------------------------	--------------	-------	--------------	---------	-------------	------------

E1000958-001 100.00µL E1000965-001 100.00µL EQ1000422-01 100.00µL EQ1000422-02 100.00µL EQ1000422-03 100.00µL

Name:	1668A Labeled Working Standard	Inventory ID	21372	Logbook Ref:	B3-31-2	Expires On:	09/07/2011
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E1000958-001 1,000.00µL E1000965-001 1,000.00µL EQ1000422-01 1,000.00µL EQ1000422-02 1,000.00µL EQ1000422-03 1,000.00µL

Name:	1668A Working Matrix Standard	Inventory ID	21373	Logbook Ref:	B3-31-3	Expires On:	09/07/2011
-------	-------------------------------	--------------	-------	--------------	---------	-------------	------------

EQ1000422-02 1,000.00µL EQ1000422-03 1,000.00µL

Preparation Materials

Sensafe Free Chlorine WTR CHK	C2-35-001 (15785)	Acetone 99.5% Minimum	C2-39-7 (19146)	Glass Wool	C2-42-6 (19656)
Sulfuric Acid Reagent Grade H2SO4	C2-40-2 (19147)	Dichloromethane (Methylene Chloride) 99.9% MeCl2	C2-42-4 (19654)	Sodium Thiosulfate Anhydrous Reagent Grade NaS2O3	C2-37-5 (19136)
Sodium Hydroxide Reagent Grade NaOH	C2-40-5 (19149)	Sodium Sulfate Anhydrous Reagent Grade Na2SO4	C2-43-1 (19711)	Hexane (n-Hexane) 98.5% Minimum	C2-42-3 (19653)
Nonane (n-Nonane) 99%	C2-33-001 (13944)	Silica Gel Reagent Grade	C2-38-6 (19140)	Toluene 99.9% Minimum	C2-42-5 (19655)

Preparation Steps

Step:	Extraction	Step:	Acid Clean	Step:	Silica Gel Clean	Step:	Final Volume
Started:	9/7/10 11:37	Started:	9/8/10 08:00	Started:	9/8/10 08:45	Started:	9/10/10 15:05
Finished:	9/7/10 12:13	Finished:	9/8/10 08:00	Finished:	9/8/10 10:20	Finished:	9/10/10 16:30
By:	AKODUR	By:	AKODUR	By:	AKODUR	By:	AKODUR

Comments:

Preparation Information Benchsheet

Prep Run#: 118668
Team: Semivoia GCMS/AKODUR

Prep Workflow: OrgExtAq(365)
Prep Method: Method

Status: Prepped
Prep Date/Time: 9/7/10 11:37 AM

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Reviewed By: ak Date: 9/16/10

Chain of Custody

Relinquished By: _____	Date: _____	<u>Extracts Examined</u>
Received By: _____	Date: _____	Yes No

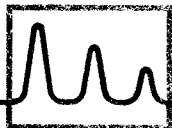
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HRS Reference #65

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IRS Reference #65

* 13 cards in



Daniel Baston
The Johnson Company
100 State Street
Montpelier, VT 05602

eastern analytical, inc.
professional laboratory services



Subject: Laboratory Report

Eastern Analytical, Inc. ID: 92918
Client Identification: JARD | 3-2218-3
Date Received: 9/21/2010

Dear Mr. Baston:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted

< : "less than" followed by the reporting limit

> : "greater than" followed by the reporting limit

%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,



Lorraine Olashaw, Lab Director

9-27-10
Date

5
of pages (excluding cover letter)



SAMPLE CONDITIONS PAGE

Eastern Analytical, Inc. ID#: 92918

Client: The Johnson Company

Client Designation: JARD | 3-2218-3

Temperature upon receipt (°C): 7.2

Received on ice or cold packs (Yes/No): Y

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
92918.01	Greene	9/21/10	9/20/10	aqueous		Sample temperature exceeded 6° upon receipt
92918.02	Watson	9/21/10	9/20/10	aqueous		Sample temperature exceeded 6° upon receipt

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

All results contained in this report relate only to the above listed samples.

References include:

- 1) EPA 600/4-79-020, 1983
- 2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998
- 3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- 4) Hach Water Analysis Handbook, 2nd edition, 1992

eastern analytical, inc.

www.eailabs.com

Phone: (603) 228-0525



LABORATORY REPORT

Eastern Analytical, Inc. ID#: 92918

Client: The Johnson Company

Client Designation: JARD | 3-2218-3

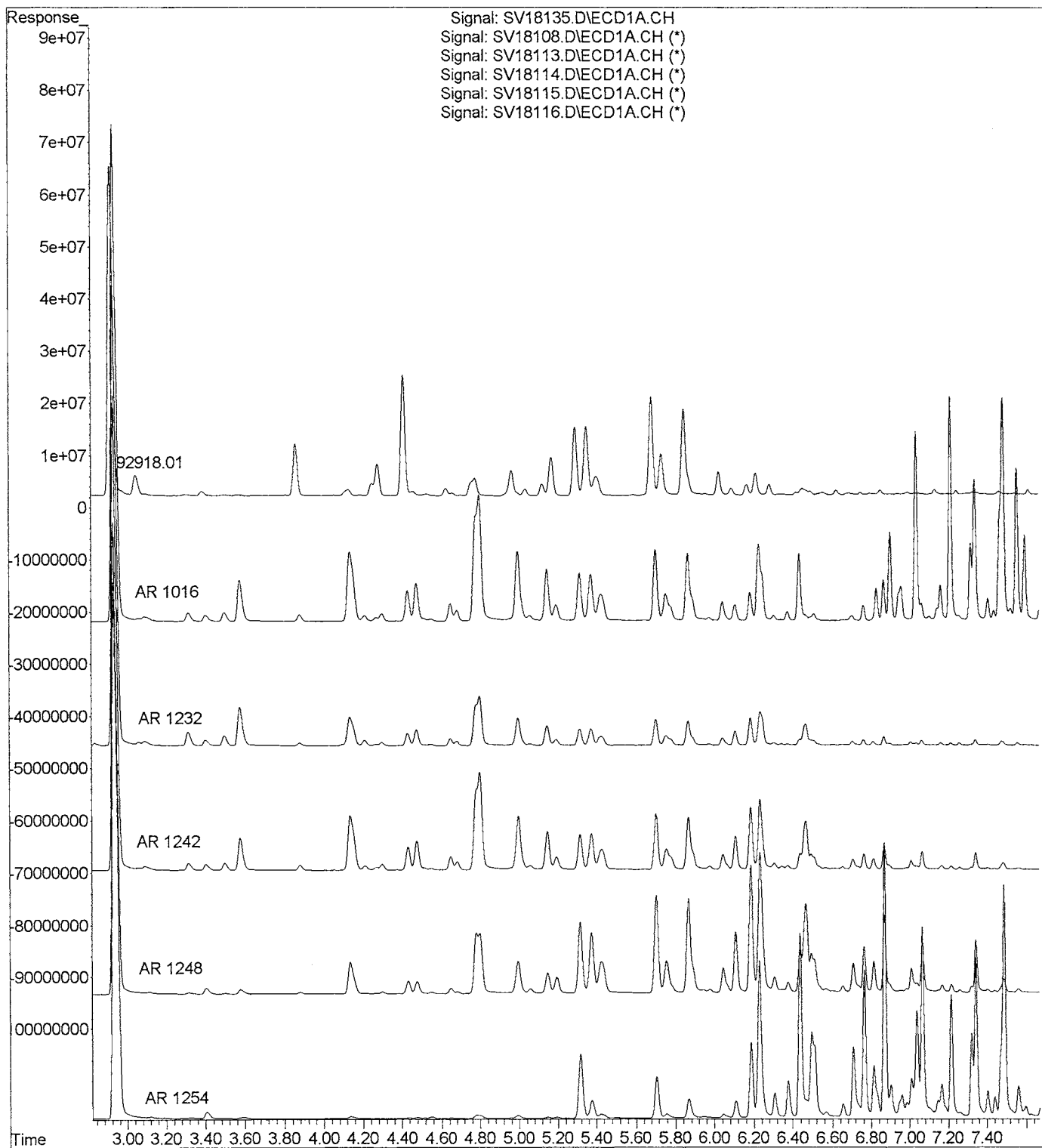
Sample ID: Greene Watson

Lab Sample ID:	92918.01	92918.02
Matrix:	aqueous	aqueous
Date Sampled:	9/20/10	9/20/10
Date Received:	9/21/10	9/21/10
Units:	ug/l	ug/l
Date of Extraction/Prep:	9/23/10	9/23/10
Date of Analysis:	9/24/10	9/24/10
Analyst:	JW	JW
Method:	8082	8082
Dilution Factor:	1	1

PCB-1016	< 0.3	1.8
PCB-1221	< 0.3	< 0.3
PCB-1232	< 0.3	< 0.3
PCB-1242	< 0.3	< 0.3
PCB-1248	< 0.3	< 0.3
PCB-1254	< 0.3	< 0.3
PCB-1260	< 0.3	< 0.3
TMX (surr)	67 %R	68 %R
DCB (surr)	87 %R	71 %R

Sample Watson: The sample contains more of the heavier Aroclor 1016 congeners than what would normally be expected. The concentration of Aroclor 1016 may be underestimated. Refer to the sample chromatogram overlay for more details. The column percent difference exceeded 40%. The highest concentration was reported.

File :C:\msdchem\1\DATA\2010\092310\SV18135.D
Operator : JW
Acquired : 24 Sep 2010 00:41 using AcqMethod PEST.M
Instrument : HP G1530A
Sample Name: 92918.02
Misc Info : A092310PCB1
Vial Number: 49





QC REPORT

Eastern Analytical, Inc. ID#: 92918

Batch ID: 734038-47330/A092310PCB1

Client: The Johnson Company

Client Designation: JARD | 3-2218-3

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.3	2.1 (105 %R)	2.3 (117 %R) (11 RPD)	9/24/2010	ug/l	40 - 140	20	8082
PCB-1221	< 0.3	(%R N/A)	(%R N/A) (RPD N/A)	9/24/2010	ug/l	40 - 140	20	8082
PCB-1232	< 0.3	(%R N/A)	(%R N/A) (RPD N/A)	9/24/2010	ug/l	40 - 140	20	8082
PCB-1242	< 0.3	(%R N/A)	(%R N/A) (RPD N/A)	9/24/2010	ug/l	40 - 140	20	8082
PCB-1248	< 0.3	(%R N/A)	(%R N/A) (RPD N/A)	9/24/2010	ug/l	40 - 140	20	8082
PCB-1254	< 0.3	(%R N/A)	(%R N/A) (RPD N/A)	9/24/2010	ug/l	40 - 140	20	8082
PCB-1260	< 0.3	2.5 (126 %R)	2.6 (129 %R) (2 RPD)	9/24/2010	ug/l	40 - 140	20	8082
TMX (surr)	71 %R	67 %R	72 %R	9/24/2010	% Rec	30 - 150	20	8082
DCB (surr)	96 %R	83 %R	88 %R	9/24/2010	% Rec	30 - 150	20	8082

Samples were extracted and analyzed within holding time limits.

Instrumentation was calibrated in accordance with the method requirements.

The method blanks were free of contamination at the reporting limits.

Sample surrogate recoveries met the above stated criteria.

The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.

There were no exceptions in the analyses, unless noted.

* Flagged analyte recoveries deviated from the QA/QC limits.

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

[illegible]

PROJECT MANAGER: Dan Baston
COMPANY: The Johnson Company
ADDRESS: 100 State St. Suite 600
CITY: Montpelier STATE: VT ZIP: 05602
PHONE: (802) 229-4800 EXT.:
FAX: (802) 229-5876
E-MAIL: DPBO@JCOMAIL.COM
SITE NAME: JARD
PROJECT #: 3-2218-3
STATE: NH MA ME ☒ VT OTHER:
REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER:
QUOTE #: PO #:

DATE NEEDED: standard VAT

QA/QC
REPORTING LEVEL
A B C
OR
MA MCP
PRESUMPTIVE CERTAINTY

REPORTING OPTIONS
PRELIMS: YES OR NO
IF YES: FAX OR PDF

ELECTRONIC OPTIONS
 NO FAX E-MAIL PDF EQUIS

TEMP. 7.2 °C
ICE? YES No

METALS: 8 RCRA 13 PP FE, MN PB, CU

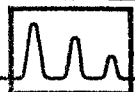
OTHER METALS: _____

DISSOLVED METALS FIELD FILTERED?	YES	NO
----------------------------------	-----	----

NOTES: (1E: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

SAMPLER(S): Patricia Coppolino George Desch
 RELINQUISHED BY: [Signature] DATE: 9/21/10 TIME: 8:57 RECEIVED BY: [Signature]
 RELINQUISHED BY: [Signature] DATE: 9/21/10 TIME: 11:21 RECEIVED BY: Norman Cain
 RELINQUISHED BY: Norman Cain DATE: 9/21/10 TIME: 1:34 RECEIVED BY: [Signature]

SITE HISTORY: Capacitor manufacturing
SUSPECTED CONTAMINATION: PCBs
FIELD READINGS:



eastern analytical, inc.

professional laboratory services

25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMER_SERVICE@EAILABS.COM | WWW.EAILABS.COM

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)

APPENDIX D

FIELD FORMS

Well ID: MW-1

Date: 9-1-10

Time on Site: 11:00

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: mw-1 Date: 9-1-10 Sampler's Initials: WM

Purge Water Disposal Method Draw Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Peristaltic Pump Sample Time: 12:00

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-3	EAI	2-1L Amber glass	Ice	8270 8082 EAI

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

P:\STANDARD\JCO Forms\MW GW sample form.doc

Time Off Site 12:30

Well ID: MW-2

Project #: 2-2218-3

Date: 9-1-10

Time on Site: 18:20

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 8.08

Gallons per foot¹: 0.16 Well volume (gal): 0.24

2. PURGING DATA: Method: Perst. Puz Stabilized intake depth: 9.0

Purge Volume @ 1 well volumes: 0.9 (liters) Purge Rate: 100 (ml/min)

Parameter equipment: YSI, turbidimeter

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Project Number: 3-2218-3 Well Name: MW-2 Date: 9-1-10 Sampler's Initials: WM

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 19:15

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
<u>GW</u>	<u>JARD-3</u>	<u>EAI</u>	<u>2-IL Amber glass</u>	<u>ice</u>	<u>8270c</u> <u>8082</u> <u>EAI</u>

¹well volumes for various diameters in gal./ft.

0.50" = 0.01
2.00" = 0.16

0.75" = 0.023
3.00" = 0.32

1.00" = 0.041
3.50" = 0.50

1.25" = 0.064
4.00" = 0.65

1.50" = 0.09
6.00" = 1.47

Comments:

P:\STANDARDUCO Forms\MW GW sample form.doc

Time Off Site 19:30 ^{WM} 9-1-10
19:30

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: MW-3

Project #: 3-2218-3

Date: 9-2-10

Time on Site: 9:55

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 9.58 / 12.0 / 10.0

Total well depth (ft): 12.27 Well Dia.(in): 2.0 Length of water column in well (ft): 2.69

Gallons per foot¹: 0.16 Well volume (gal): 0.4

2. PURGING DATA: Method: Purst. Rys Stabilized intake depth: 12.0

Purge Volume @ 1 well volumes: 1.6 (liters) Purge Rate: 100 (ml/min)

Parameter equipment: YSI, turbidimeter (3 well vol = 4.9 L)

[illegible]

Project Number: 3-2218-3 Well Name: MW-3 Date: 9-2-10 Sampler's Initials: um

Purge Water Disposal Method Drum Comments (e.g. color, odor): oil globes in water

3. SAMPLE COLLECTION: Method: Penet. Pump Sample Time: 10:27

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-3	EAI	2-1L Amber glass (~200 ml each) as per EAT	ice	8270c 8082 EAI 1668A
DI	JARD-3	EAI	2-1L Amber glass DPB	ice	8270c 8082 EAI

well volumes for various diameters in gal./ft.

0.50" = 0.01 0.75" = 0.023 1.00" = 0.041 1.25" = 0.064 1.50" = 0.09
2.00" = 0.16 3.00" = 0.32 3.50" = 0.50 4.00" = 0.65 6.00" = 1.47

Comments: - 3 well volumes purged (as per DPB) before sampling
- EB-1 Taken with DI water over decomposed w/c
miles (Equng Blah) 10:40.

Phone: (802) 229-4600
Fax: (802) 229-5876
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Well ID: MW-3D

Project #: 3-2218-3

Date: 4-2-10

Time on Site: 8:05

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 10.58

Gallons per foot¹: 0.16 Well volume (gal): 3.3

Purge Volume @ 1 well volumes: 12.5 (liters) Purge Rate: 200 (ml/min)

[illegible]

Project Number: 3-2218-3 Well Name: mw-3 D Date: 9-2-10 Sampler's Initials: WPM
Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 9:20

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JAPD-3	EACI	2-1L Amber Glass	Ice	8270C 8082 EHI
			1-1L Amber Glass	Ice	1668A
			2-1L Amber Glass	Ice	8270C 8082

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments: DP-1 is Duplicate of MW-3D (friction time 8.25)
9-2-10

(No 1668A on MW-3D / only MW-3 as per DPB)

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Fax: (802) 229-5876
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Well ID: MW-4

Project #: 3-2218-3

Date: 9-1-10

Time on Site: 19:40

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 5.23

Total well depth (ft): 9.95 Well Dia.(in): 2.0 Length of water column in well (ft): 1.72

Gallons per foot¹: 0.16 Well volume (gal): 0.28

2. PURGING DATA: Method: Perist. Pump Stabilized intake depth: 9.5

Purge Volume @ 1 well volumes: 1.04 (liters) Purge Rate: 100 (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: MW-4 Date: 9-1-10 Sampler's Initials: WM

Purge Water Disposal Method Draw Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 20:27

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-3	EAI	2-1L Amber glass	Ice	8270C / EAI 8082

¹well volumes for various diameters in gal./ft.

0.50" = 0.01

0.75" = 0.023

1.00" = 0.041

1.25" = 0.064

1.50" = 0.09

2.00" = 0.16

3.00" = 0.32

3.50" = 0.50

4.00" = 0.65

6.00" = 1.47

Comments:

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Time Off Site 20:55

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: MW-4D

Project #: 3-2218-3

Date: 9-2-10

Time on Site: 4:15

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 9.55

Total well depth (ft): 31.52 Well Dia.(in): 2.0 Length of water column in well (ft): 21.97

Gallons per foot¹: 0.16 Well volume (gal): 3.5

2. PURGING DATA: Method: Perist. Pump Stabilized intake depth: 28.0

Purge Volume @ 1 well volumes: 13.3 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: MW-4D Date: 9-2-10 Sampler's Initials: mm

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. pump Sample Time: 7:40

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
<u>GW</u>	<u>JARD-3</u>	<u>EAL</u>	<u>2-1L Amber glass</u>	<u>ice</u>	<u>8270C / EAL</u> <u>5082</u>

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

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Time Off Site 7:55

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: 14W-6

Project #: 3-2218-3

Date: 9-1-10

Time on Site: 14:55

Description of measuring point (MP) Top of PRC canopy Depth to water below MP (ft): 11.92

Gallons per foot¹: 0.16 Well volume (gal): 0.35

Purge Volume @ 1 well volumes: 1.44 (liters) Purge Rate: 200 (ml/min)

[illegible]

Project Number: 3-2218-3 Well Name: MW-6 Date: 9-1-10 Sampler's Initials: WM

Purge Water Disposal Method Draw Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perst. Pump Sample Time: 15:45

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JAAD-3	EAI	2-1L Amber glass	ICL	8270C 8082 EAI
GW	↓	↓	↓	↓	↓ ↓

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

DP-1 is duplicate (#1) of MW-6. (Fictitious time 1400)

Ground Water Monitoring Well Sample Collection Record

Project Name: JARD Project #: 3-2218-3 Well ID: MW-6D
Site Location: Bernington, VT Date: 9-1-10
Weather Conditions: Sw 85°F Time on Site: 16:30

1. WATER LEVEL DATA: (from TOC)

Description of measuring point (MP) Top of PVC casing Depth to water below MP (ft): 12.33
Total well depth (ft): 33.72 Well Dia (in): 2.0 Length of water column in well (ft): 21.39
Gallons per foot¹: 0.16 Well volume (gal): 3.4

2. PURGING DATA: Method: Perv. Aug Stabilized intake depth: 31.5

Purge Volume @ 1 well volumes: 12.0 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSI turbidimeter

Time	Depth (ft.)	volume removed (liters)	Flow Rate (mL/min)	Temp (°C)	Spec Cond. (uS/cm) @25°C	Dissolved Oxygen (mg/L)	p.H. (Std)	ORP (mV)	Turb. (NTU)
16:35	12.33	0	0	start	—	—	—	—	—
16:40	12.34	1	200	13.91	66	1.56	6.24	36	40
16:45	12.34	2	200	13.92	66	1.42	6.20	33	36
16:50	12.34	3	200	13.88	66	1.21	6.19	31	32
16:55	12.34	4	200	13.82	66	1.02	6.17	28	30
17:00	12.34	5	200	13.76	66	0.96	6.17	26	32
17:05	12.34	6	200	13.69	66	0.90	6.16	24	31
17:10	12.34	7	200	13.70	66	0.85	6.16	22	30
17:15	12.34	8	200	13.63	66	0.80	6.15	20	32
17:20	12.34	9	200	13.62	66	0.79	6.15	19	33
17:25	12.34	10	200	13.59	66	0.79	6.14	18	30
17:30	12.34	11	200	13.62	66	0.80	6.14	17	31
17:35	12.34	12	200	13.60	66	0.81	6.15	17	30
17:40	12.34	13	200	13.61	66	0.80	6.15	18	31
17:45	sampled								

Project Number: 3-2218-3 Well Name: MW-6D Date: 9-1-10 Sampler's Initials: wm

Purge Water Disposal Method Drum Comments (e.g. color, odor): slightly turbid, no odor

3. SAMPLE COLLECTION: Method: Pump & Purge Sample Time: 17:45

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-3	EAT	2-1L Amber Glass	Ice	5270C / 8082 EAT

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

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Time Off Site 18:00 ^{wm} 9-1-10
18:15

Well ID: MW-7

Date: 8-31-10

Time on Site: 6:10

Gallons per foot¹: 0.16 Well volume (gal): 1.5

Purge Volume @ 1 well volumes: 5.6 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: MW-7 Date: 8-31-10 Sampler's Initials: WPP

Purge Water Disposal Method Drum Comments (e.g. color, odor): initially lt. Brown / no odor
subsid

3. SAMPLE COLLECTION: Method: Peri. Pump Sample Time: 7:00

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-1	EAI	2-1L Amber Glass	ice	8270C ROSLERB/EAI

¹well volumes for various diameters in gal./ft.

0.50" = 0.01

0.75" = 0.023

1.00" = 0.041

1.25" = 0.064

1.50" = 0.09

2.00" = 0.16

3.00" = 0.32

3.50" = 0.50

4.00" = 0.65

6.00" = 1.47

Comments:

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Time Off Site 7:15

Well ID: MW-8

Well ID: MW-8

Time on Site: 9:30

Time on Site: 9:30

Parameter equipment: YSI, turbidimeter

[illegible]

3-2218-3
Project Number: 3-2218-3 Well Name: MW-8 Date: 9-1-10 Sampler's Initials: WPN
4-1-10 WPN

Purge Water Disposal Method Drum Comments (e.g. color, odor): lt. Brown turbid, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 10:20

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-2	EAI	21L amber glass	Ice	8270C / EAI R082

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

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Time Off Site 10:35

Phone: (802) 229-4600
Fax: (802) 229-5876
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Well ID: nw-9

Date: 9-1-10

Time on Site: 6:15

Parameter equipment: YSL turbidimeter

Project Number: 3-2218-3 Well Name: NW-9 Date: 8-1-10 Sampler's Initials: wpp

Purge Water Disposal Method Drum Comments (e.g. color, odor): Initially Cl, Brown / no odor
subred

3. SAMPLE COLLECTION: Method: Perst. Pump Sample Time: 7:10

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
<u>GW</u>	<u>JARD-2</u>	<u>EAI</u>	<u>2-1L Amber Glass</u>	<u>Ice</u>	<u>8270C / 8082 / EAI</u>

¹well volumes for various diameters in gal./ft.

0.50" = 0.01
2.00" = 0.16

0.75" = 0.023
3.00" = 0.32

1.00" = 0.041
3.50" = 0.50

1.25" = 0.064
4.00" = 0.65

1.50" = 0.09
6.00" = 1.47

Comments:

① orangish chunks in water / Turbid all purge.
CO-3L.

Ground Water Monitoring Well Sample Collection Record

Project Name: JARD Project #: 3-2218-3 Well ID: MW-9D
Site Location: Benn Date: 9-1-10
Weather Conditions: Sun 70°F Time on Site: 7:30

1. WATER LEVEL DATA: (from TOC)

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 5.14
Total well depth (ft): 26.29 Well Dia.(in): 2.0 Length of water column in well (ft): 21.15
Gallons per foot¹: 0.16 Well volume (gal): 3.38

2. PURGING DATA: Method: Perist. Pump Stabilized intake depth: 24.0

Purge Volume @ 1 well volumes: 12.8 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSI, turbidimeter

Time	Depth (ft.)	volume removed (liters)	Flow Rate (mL/min)	Temp (°C)	Spec Cond. (uS/cm) @25°C	Dissolved Oxygen (mg/L)	p.H. (Std)	ORP (mV)	Turb. (NTU)
7:40	5.14	0	0	start	-	-	-	-	-
7:45	5.17	1	200	16.72	87	0.95	6.19	7	36
7:50	5.17	2	200	16.84	87	0.78	6.19	2.9	34
7:55	5.17	3	200	16.88	87	0.71	6.20	0.3	32
8:00	5.17	4	200	16.74	87	0.60	6.19	-5	34
8:05	5.17	5	200	16.88	87	0.59	6.20	-6	30
8:10	5.17	6	200	16.90	87	0.58	6.20	-8	24
8:15	5.17	7	200	16.79	87	0.56	6.20	-8	28
8:20	5.17	8	200	16.82	87	0.57	6.19	-7	22
8:25	5.17	9	200	16.72	86	0.56	6.19	-8	25
8:30	5.17	10	200	16.70	86	0.55	6.18	-8	27
8:35	5.17	11	200	16.73	86	0.54	6.18	-9	26
8:40	5.17	12	200	16.69	86	0.55	6.19	-9	25
8:45	5.17	13	200	16.72	86	0.54	6.19	-8	27
8:50	Sample 1								

Project Number: 3-2218-3 Well Name: MW-9D Date: 9-1-10 ⁹⁻¹⁻¹⁰ ₈₋₃₁₋₁₀ Sampler's Initials: um

Purge Water Disposal Method Draw Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 8:50

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-2	EAI	2-1L Amber glass	ICE	8270C / EAI 8082

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

P:\STANDARDUCO Forms\MW GW sample form.doc

Time Off Site 9:10

Well ID: MW-10

Date: 8-30-10

Time on Site: 15:30

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: mw-10 Date: 8-30-10 Sampler's Initials: WPN

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 16:12

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JAPD-1	EAI	2-1L Amber glass	ice	8270c 8082 PCB / EAI

¹well volumes for various diameters in gal./ft.

0.50" = 0.01

0.75" = 0.023

1.00" = 0.041

1.25" = 0.064

1.50" = 0.09

2.00" = 0.16

3.00" = 0.32

3.50" = 0.50

4.00" = 0.65

6.00" = 1.47

Comments:

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Time Off Site 16:30

Well ID: MW-11

Project #: 3-2218-3

Date: 8-30-60

Time on Site: 16:35

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 1.96

Gallons per foot¹: 0.16 Well volume (gal): 1.5

Purge Volume @ 1 well volumes: 5.6 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSI, turbidimeter

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Project Number: 3-2218-3 Well Name: MW-11 Date: 8-30-10 Sampler's Initials: un

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 17:17

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-1	EAI	2-1L Amber glass	Ice	8270C PCB9012/EAI

¹well volumes for various diameters in gal./ft.

0.50" = 0.01

0.75" = 0.023

1.00" = 0.041

1.25" = 0.064

1.50" = 0.09

2.00" = 0.16

3.00" = 0.32

3.50" = 0.50

4.00" = 0.65

6.00" = 1.47

Comments:

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Time Off Site 17:25

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: MW-12

Project #: 3-2218-3

Date: 8-30-10

Time on Site: 9:50

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 4.35

Gallons per foot¹: 0.16 Well volume (gal): 1.08

Purge Volume @ 1 well volumes: 4.1 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSL turbidimeter

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Project Number: 3-2218-3 Well Name: mw-12 Date: 8/30/10 Sampler's Initials: wm

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color no odor

3. SAMPLE COLLECTION: Method: Perist Pump Sample Time: 10:32

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-1	EAI	2-1L Amber Glass	Ice	8270C PCB/PAH/EAI
					8082 8-30-10

Well volumes for various diameters in gal./ft.

0.50" = 0.01 0.75" = 0.023 1.00" = 0.041 1.25" = 0.064 1.50" = 0.09
2.00" = 0.16 3.00" = 0.32 3.50" = 0.50 4.00" = 0.65 6.00" = 1.47

Comments:

P:\STANDARDUCO Forms\MW GW sample form.doc

Time Off Site 10:48

Well ID: MW-13

Project #: 3-2218-3

Date: 8-30-10

Time on Site: 12:50

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 5.70

Gallons per foot¹: 0.16 Well volume (gal): 1.9

Purge Volume @ 1 well volumes: 7.1 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSI, turbidimeter

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Project Number: 3-2218-3 Well Name: MW-13 Date: 8-30-10 Sampler's Initials: WM

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 13:37

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-1	EAI	2-1L Amber glass	Ice	8270C PGB TOSZ/EAI

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments: ① sun on well area / covered but warmed up.

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: EPA-3

Project #: 3-2218-3

Date: 8-31-10

Time on Site: 17:55

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 10.05

Gallons per foot¹: 0.16 Well volume (gal): 0.86

2. PURGING DATA: Method: Perist. Pump Stabilized intake depth: 14.0

Purge Volume @ 1 well volumes: 3.27 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3.2218.3 Well Name: EPA-3 Date: 8-31-10 Sampler's Initials: WPM

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 18:40

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-2	EAI	2-1L Amber glass	ice	82705 / EAI 8082

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments: WPD 8-31-10 NA
(+) stream bank restoration / well cut down by DFB

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Time Off Site 19:00

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: EPA-4

Project #: 3-2218-3

Date: 8-31-10

Time on Site: 16:40

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 9.24

Total well depth (ft): 14.53 ① Well Dia. (in.): 2.0 Length of water column in well (ft): 5.29

Gallons per foot¹: 0.16 Well volume (gal): 0.85

2. PURGING DATA: Method: Perist. Pump Stabilized intake depth: 13.0

Purge Volume @ 1 well volumes: 3.2 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSL turbidimeter

[illegible]

Project Number: 3-2219-3 Well Name: EPA-4 Date: 8-31-10 Sampler's Initials: WPM

Purge Water Disposal Method: Draw Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Pervest-Pump Sample Time: 17:30

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-2	EAI	2-1L Amber glass	Ice	8270C 8082.FCB EAI

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments: ① stream bank restoration / well cut down by DPB.

* EPA-5 well destroyed with stream bank restoration

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: EPA-6

Project #: 3-2218-3

Date: 8-31-10

Time on Site: 15:30

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 9.38

Total well depth (ft): 13.42 (1) Well Dia. (in): 2.0 Length of water column in well (ft): 4.04

Gallons per foot¹: 0.16 Well volume (gal): 0.65

2. PURGING DATA: Method: Perist. Pump Stabilized intake depth: 11.8

Purge Volume @ 1 well volumes: 2.45 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSL turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: EPA-6 Date: 8-31-10 Sampler's Initials: WPD

Purge Water Disposal Method Draw Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Permit Pump Sample Time: 16:15

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-2	EAI	2-1L Amber Glass	ice	8270C / EAI 8082

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

① stream bank restoration / well cut by DPR.

Phone: (802) 229-4600
Fax: (802) 229-5876
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Well ID: EPA-7

Project #: 3.2218-3

Date: 8-31-10

Time on Site: 14:20

Description of measuring point (MP) Top of PUC Depth to water below MP (ft): 10.88

Total well depth (ft): 13.93 (1) Well Dia.(in): 2.0 Length of water column in well (ft): 3.05

Gallons per foot¹: 0.16 Well volume (gal): 0.49

2. PURGING DATA: Method: Perist. Pump Stabilized intake depth: 12.8

Purge Volume @ 1 well volumes: 1.85 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: EPA-7 Date: 8.21-10 Sampler's Initials: wm

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 15:05

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-2	EAI	2-1L Amber glass	ice	5270c / EAI 3082

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments: ① stream bank restoration / well cut down by DPB.

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Time Off Site 15:25

Well ID: EPA-8

Project #: 3-2218-3

Date: 8-31-10

Time on Site: 12:50

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 8.06

Gallons per foot¹: 0.16 Well volume (gal): 0.12

Purge Volume @ 1 well volumes: 0.48 (liters) Purge Rate: 200-100 (ml/min)

[illegible]

Project Number: 3-2218-3 Well Name: EPA-8 Date: 8-31-10 Sampler's Initials: wm

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Pump + Auger Sample Time: 13:45

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-2	EAI	2-1L Amber glass	ice	8270C 8082 PCB / EAI

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments: ① stream bank restoration / well cut down by DPB.

Phone: (802) 229-4600
Fax: (802) 229-5876
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Well ID: EPA-9

Project #: 3-2218-3

Date: 8-1-10

Time on Site: 12:40

Description of measuring point (MP) Top of PVC Depth to water below MP (ft): 11.49

Total well depth (ft): 11.52 Well Dia.(in): 2.0 Length of water column in well (ft): —

Gallons per foot¹: 0.16 Well volume (gal): -

2. PURGING DATA: Method: Perist. Pump Stabilized intake depth: —

Purge Volume @ 1 well volumes: _____ (liters) Purge Rate: _____ (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: EPA-9 Date: 9-1-10 Sampler's Initials: WMM

Purge Water Disposal Method _____ Comments (e.g. color, odor): _____

3. SAMPLE COLLECTION: Method: NA Sample Time: _____

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments: ① well plugged @ 11.52' btoC. / previous 8-12-05 sample
Tried to fish out - weeds/soft. / Showed TD-17.76' btoC?
(No Sample)

Phone: (802) 229-4600
Fax: (802) 229-5876
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Well ID: EPA-10

Project #: 3-2218-3

Date: 9-1-10

Time on Site: 13:30

Description of measuring point (MP) Top of PUC Depth to water below MP (ft): 10.75

Total well depth (ft): 17.72 Well Dia.(in): 2.0 Length of water column in well (ft): 6.97

Gallons per foot¹: 0.16 Well volume (gal): 1.1

2. PURGING DATA: Method: Perist. Pump Stabilized intake depth: 16.0

Purge Volume @ 1 well volumes: 4.2 (liters) Purge Rate: 200 (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: EPA-10 Date: 9-1-10 Sampler's Initials: mm

Purge Water Disposal Method Draw Comments (e.g. color, odor): initially Lt. brown / orange / no odor
Turned

3. SAMPLE COLLECTION: Method: Purst. Pump Sample Time: 14:20

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-3	EAT	2-1L Amber glass	ice	82705 / 8082 (EAT)

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

* EPA 2 - day / Baile? stuck in well or broken by
stream restoration work
no sample

Phone: (802) 229-4600
Fax: (802) 229-5876
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Well ID: Greene
Private
well

Project #: 3-2218-3

Date: 8/30/10

Time on Site: 1405

Description of measuring point (MP) concrete rim Depth to water below MP (ft): 2.20

Total well depth (ft): 6.5 Well Dia.(in): ~36 Length of water column in well (ft): —

Gallons per foot¹: _____ Well volume (gal): _____

2. PURGING DATA: Method: P. Pump Stabilized intake depth: 2.5'

Purge Volume @ 1 well volumes: _____ (liters) Purge Rate: 500 (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: Greene Date: 8/30/10 Sampler's Initials: DPB

Purge Water Disposal Method dnum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: P. Pump Sample Time: 14:52

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
g.w.	JARD-1	EAT	101L amber	none	PCB 8082/EAT
g.w.	↓	↓	101L amber	none	DEHP 8270/EAT

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

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Time Off Site 1500

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: PZ-4

Project #: 3-1218-3

Date: 8-31-10

Time on Site: 7:20

Description of measuring point (MP) Top of tube Depth to water below MP (ft): 3.40' / ~3.47 dy

Gallons per foot¹: 0.01 Well volume (gal): 0.021

Purge Volume @ 1 well volumes: 0.08 (liters) Purge Rate: 100 (ml/min)

[illegible]

Project Number: 3-2218-3 Well Name: PZ-4 Date: 8-31-10 Sampler's Initials: WM

Purge Water Disposal Method Down Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 8:00

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
<u>GW</u>	<u>JARD-1</u>	<u>EAI</u>	<u>2-1L Amber glass</u>	<u>HOE</u>	<u>8270C 8082 PCB / EAI</u>

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

① unable to measure w/c in tube.

② well allowed to recharge multiple times to grab samples. (8:00 started)

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: PZ-05

Date: 8-31-10

Time on Site: 9:30

Parameter equipment: YSI turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: PZ-05 Date: 8-31-10 Sampler's Initials: WPD

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 9:50

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
<u>GW</u>	<u>JARD-2</u>	<u>EAT</u>	<u>2-12 Amber glass</u>	<u>ice</u>	<u>82706 / EAT</u> <u>8092</u>

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

① unable to measure w/L in tube

② allowed to recharge multiple times to sample/9:50

Phone: (802) 229-4600
Fax: (802) 229-5876
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Well ID: PZ-06

Project #: 3-2218-3

Date: 8-31-10

Time on Site: 11:00

Description of measuring point (MP).

Total well depth (ft): 5.5 Well Dia. (in): 1/2 Length of water column in well (ft): 1.81

Gallons per foot¹: 0.01 Well volume (gal): 0.018

Perist. Pump _____ Stabilized intake depth: 5.3

Purge Volume @ 1 well volumes: 0.67 (liters) Purge Rate: 100 (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2278-3 Well Name: PZ-d6 Date: 8-31-10 Sampler's Initials: U/M

Purge Water Disposal Method Drum Comments (e.g. color, odor): no color, no odor

3. SAMPLE COLLECTION: Method: Perm. Prg Sample Time: 11:30

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-2	EAT	2-12 Amber Glass	ice	8270C/8282/EAT

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

① unable to recharge w/ intake

② allowed well to recharge multiple times to fill bottles.

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Time Off Site 12:15

Phone: (802) 229-4600
Fax: (802) 229-5876
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Well ID: PZ-12

Project #: 3-2218-3

Date: 8-30-10

Time on Site: 11:05

Description of measuring point (MP) Top of tube Depth to water below MP (ft): 2.87 / 2.70' outside to SW

Gallons per foot¹: 0.01 Well volume (gal): 0.026

Purge Volume @ 1 well volumes: 0.099 (liters) Purge Rate: 100 (ml/min)

Parameter equipment: YSL turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: PZ-12 Date: 8-30-10 Sampler's Initials: um

Purge Water Disposal Method _____ Comments (e.g. color, odor): _____

3. SAMPLE COLLECTION: Method: _____ Sample Time: _____

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab

Well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

① Not sampled as Piezo w/c lower than SW.

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Time Off Site 11:35

Phone: (802) 229-4600
Fax: (802) 229-5876
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Well ID: 02-13

Project #: 3-2218-3

Date: 8-30-10

Time on Site: 14:00

Description of measuring point (MP) Top of tube Depth to water below MP (ft): 1.01 / 1.64 outside to Pond level

Gallons per foot¹: 0.01 Well volume (gal): 0.045

Purge Volume @ 1 well volumes: 0.17 (liters) Purge Rate: 100 (ml/min)

Parameter equipment: YSL turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: PZ-13 Date: 8-30-10 Sampler's Initials: WPN

Purge Water Disposal Method Drum Comments (e.g. color, odor): lt. brown turbid, no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 14:35

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-1	EAI	2-1L Amber glass	Ice	8270C / EAI

¹well volumes for various diameters in gal./ft.

0.50" = 0.01
2.00" = 0.16

0.75" = 0.023
3.00" = 0.32

1.00" = 0.041
3.50" = 0.50

1.25" = 0.064
4.00" = 0.65

1.50" = 0.09
6.00" = 1.47

Comments:

① unable to measure WL in Prego's when purging.

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Well ID: PZ-14

Project #: 3-2218-3

Date: 8-30-10

Time on Site: 17:35

Description of measuring point (MP) Top of tube Depth to water below MP (ft): 2.13 / 2.57

Gallons per foot¹: 0.07 Well volume (gal): 0.034

2. PURGING DATA: Method: Permut. Pump Stabilized intake depth: 5.3'

Purge Volume @ 1 well volumes: 0.13 (liters) Purge Rate: 100 (ml/min)

Parameter equipment: YSI, turbidimeter

[illegible]

Project Number: 3-2218-3 Well Name: PZ-14 Date: 8-30-10 Sampler's Initials: Wm

Purge Water Disposal Method Down Comments (e.g. color, odor): lt. brown turbid / no odor

3. SAMPLE COLLECTION: Method: Perist. Pump Sample Time: 18:30

Sample Matrix	Chain-of-Custody#	Shipper ID#	Container Qty/type	Preservation	Analytical method/Lab
GW	JARD-1	EAT	2-1L amber glass	ice	82706 7082 PCD/EAT

¹well volumes for various diameters in gal./ft.

0.50" = 0.01	0.75" = 0.023	1.00" = 0.041	1.25" = 0.064	1.50" = 0.09
2.00" = 0.16	3.00" = 0.32	3.50" = 0.50	4.00" = 0.65	6.00" = 1.47

Comments:

① tube too narrow to measure w/c while pumping

② Allow to recharge - then sample / started 18:30

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Time Off Site 20:30

CHAIN-OF-CUSTODY RECORD

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Page 1 of 1

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE/TIME *If COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW) GRAB/*COMPOSITE	VOC		SVOC		TCMP	METALS		INORGANICS				MICRO	OTHER	NOTES MeOH Vial #
			524.2 BTEX 9260B 624 1,4 Dioxane EDB DBCP	8021B BTEX HALOS	8015B GRO HECRO MAYPH	8020B 625 ABN A BN PAH TPH100 LI L2		8015B DRO HEDRO MAYPH	PEST 40B PCB 40B PEST 8081A PCB 8083	OIL & GREASE 1664 TPH 1664	TCMP 1311 ABN VOC PEST HEALS	DISSOLVED METALS (LIST BELOW) TOTAL METALS (LIST BELOW)	TS TSS TDS SPEC CON DN CI F SO ₄ NO ₃ NO ₂ NO ₃ /NO ₂			
SB-16 (10-15')	8/6/10 1047	SG			X											
SB-16 (25-30')	8/6/10 1044	SG			X											
MW-3D (20-25')	8/2/10 1427	SG			X											
MW-3D (10-15')	8/2/10 1408	SG			X											
MW-8D (25-30')	8/5/10 1023	SG			X											
MW-3D (25')	8/2/10 1406	SG			X											
MW-10A (16-26')	8/5/10 1202	SG			X											

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER
PRESERVATIVE: H-HCL; N-HNO₃; S-H₂SO₄; Na-NAOH; M-MEOH

PROJECT MANAGER: Daniel Basten
 COMPANY: The Johnson Company
 ADDRESS: 100 State St. Suite 600
 CITY: Montpelier STATE: VT ZIP: 05602
 PHONE: (802) 229-4600 EXT: 155
 FAX: (802) 229-5876
 E-MAIL: DPB@JCOMAIL.COM
 SITE NAME: Said
 PROJECT #: 3-2218-3
 STATE: NH MA ME VT OTHER: _____
 REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER:
 QUOTE #: _____ PO #: _____

DATE NEEDED: Standard DAT

QA/QC
 REPORTING LEVEL
 A B C
 OR
 MA MCP
 PRESUMPTIVE CERTAINTY

REPORTING OPTIONS
 PRELIMS: YES OR NO
 IF YES: FAX OR PDF

ELECTRONIC OPTIONS
 NO FAX E-MAIL PDF
 EQUIS

TEMP. _____ °C
 ICE? YES NO

METALS: 8 RCRA 13 PP Fe, Mn Pb, Cu

OTHER METALS: _____

DISSOLVED METALS FIELD FILTERED? YES NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

Soxhlet extraction for PCB analysis
SVOC analysis report only
DEHP (CAS #117-81-7)

SITE HISTORY: _____

SUSPECTED CONTAMINATION: PCBs, DEHP

FIELD READINGS: _____

SAMPLER(S): Dan Basten
Rel M 8/9/10 0832 1044
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: Jay Con
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____



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WWW.EAILABS.COM

(WHITE: ORIGINAL

GREEN: PROJECT MANAGER)

CHAIN-OF-CUSTODY RECORD

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Page 1 of 1

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE / TIME *If COMPOSITE, INDICATE BOTH START & FINISH DATE / TIME	MATRIX (SEE BELOW) GRAB / *COMPOSITE	VOC		SVOC		TCLP METALS		INORGANICS										MICRO		OTHER		NOTES MeOH Vial #					
			524.2 524.2 BTEX 8260B 624 1,4 DICHLOR EDB DRCP	8021B BTEX HALOS	8015B GRO NEGRO HAYPH	8270B 625 SVTICS A B N PAH	TPH 100 LI L2	8015B DRO HEDRO HAYPH	PEST 608 PCB 608 PEST 808A PCB 808A	OIL & GREASE 1664 TPH 1664	TCLP 1311 AGN HEALS VOC PEST HEB	DISSOLVED METALS (LIST BELOW)	TOTAL METALS (LIST BELOW)	TS TSS TDS SPEC. CON.	BA CL F SO ₄ NO ₃ NO ₂ NO ₃ /NO ₂	800 CBOD T. ALK	TKN NH ₃ T. PHOS	pH T. RES CHLORINE	COD PHELOS TOC	TOTAL CHARGE TOTAL SURGE	REACTIVE CHARGE REACTIVE SURGE	FLUORIDE FLUORIDE		E. COLI E. COLI	ENTEROCOCC ENTEROCOCC	HETEROTROPHIC HETEROTROPHIC	PLATE COUNT	
MW-4D (30-35')	7/28/10 0818	SG					X																				1	Soxhlet
MW-6D (20-25')	7/29/10 0846	SG					X																				1	Soxhlet
MW-6D (30-35')	7/29/10 0910	SG					X																				1	Soxhlet
WT-01	7/29/10 1110	DWG				X	X																				2	DEHP only

MATRIX: A-Air; S-Soil; GW-Ground Water; SW-Surface Water; DW-Drinking Water; WW-Waste Water
PRESERVATIVE: H-HCL; N-HNO₃; S-H₂SO₄; Na-NaOH; M-MEOL

PROJECT MANAGER: Dan Baston
 COMPANY: The Johnson Company
 ADDRESS: 100 State St. Suite 600
 CITY: Montpelier STATE: VT ZIP: 05602
 PHONE: (802) 229-4100 EXT: 155
 FAX: (802) 229-5876
 E-MAIL: DBASTON@JOHNSON.COM
 SITE NAME: JARD
 PROJECT #: 3-2218-3
 STATE: NH MA ME VT OTHER: _____
 REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER: _____
 QUOTE #: _____ PO #: _____

DATE NEEDED: Standard TAT

QA/QC
 REPORTING LEVEL
 A B C
 OR
 MA MCP
 PRESUMPTIVE CERTAINTY

REPORTING OPTIONS
 PRELIMS: YES OR NO
 IF YES: FAX OR PDF

ELECTRONIC OPTIONS
 NO FAX E-MAIL PDF

TEMP. _____ °C
 ICE? YES NO

SAMPLER(S): John Kim
Rhonda Kay 09/2/10 8:30
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____
 RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____

METALS: 8 RCRA 13 PP Fe, Mn Pb, Cu

OTHER METALS: _____

DISSOLVED METALS FIELD FILTERED? YES NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

PCBs with Soxhlet extraction
 SVOC sample for DEHP only

SITE HISTORY: Capacitor Manufacture

SUSPECTED CONTAMINATION: PCBs

FIELD READINGS: _____



CHAIN-OF-CUSTODY RECORD

For Lab Use Only

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

HRS Reference #65

SAMPLE I.D.		SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC	SVOC	TCLP	METALS	INORGANICS	MICRO	OTHER	# OF CONTAINERS	NOTES MeOH Vial #
					5242 5242 BTEX 0240B 674 1, 4 DIBAZEE EDB DBCP 8021B BTEX HALOS 8015B GRO NEGRO HANPH	1827OC AGN A BN PAH TPH100 LI L2 8015B DRD MEDRO HAEPH PEST GOR PCB GOR PEST 000A FEB 000Z OIL & GREASE 1664 TPH 1664	TCLP 1311 VOC PEST METALS HEAD	DISSOLVED METALS (LIST BELOW)	TOTAL METALS (LIST BELOW)	TS TSS BA CL F SO ₄ NO ₃ NO ₂ /NO _x BOD CBOD T ALK TKN NH ₃ T PHOS pH T RES CALORINE COD PRENUIS TOC TOTAL CHLORIDE TOTAL SULFIDE REACTIVE CHLORIDE REACTIVE SULFIDE FLUORIDE IGNITABILITY T COLIFORM E COLI F COLIFORM ENTEROCOCCUS HETEROTROPHIC PLATE COUNT	PCDS-1668A EPA 816-10		
MW-12	8-30-10 / 10:32	GW G		X								2	
MW-13	13:37	GW G		X								2	
PZ-13	14:35	GW G		X								2	
MW-10	16:12	GW G		X								2	
MW-11	17:17	GW G		X								2	
Greene Well	14:52	GW G		X								2	
Greene Pipe	15:35	GW G		X								2	
PZ-14	18:30	GW G		X								2	
MW-7	8-31-10 7:00	GW G		X								2	
PZ-4	8:00	GW G		X								2	

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER;
WW-WASTE WATER

CONCENTRATIONS: U-HCl - N-HNO₃ - C-H₂SO₄ - Na-NaOH - M-MEOH (see)

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER;
WW-WASTE WATER

PRESERVATIVE: H-HCL; N-HNO₃; S-H₂SO₄; Na-NaOH; M-MEOH

PROJECT MANAGER: Daniel Baston
COMPANY: The Johnson Company
ADDRESS: 100 State St. Suite 600
CITY: Montpelier STATE: VT ZIP: 05602
PHONE: (802) 229-4600 EXT.:
FAX: (802) 229-5876
E-MAIL: DPB@JCOMAIL.COM
SITE NAME: Jcd
PROJECT #: 3-2218-3
STATE: NH MA ME ☒ VT OTHER:
REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER:
QUOTE #: PO #:

DATE NEEDED: standard TAI

QA/QC
REPORTING LEVEL
A B C
OR
MA MCP
PRESUMPTIVE CERTAINTY

REPORTING OPTIONS
PRELIMS: YES OR NO
IF YES: FAX OR PDF

ELECTRONIC OPTIONS
☐ NO FAX ☐ E-MAIL ☐ PDF

TEMP. _____
ICE? ☒ YES ☐ NO

METALS: 8 RCRA 13 PP Fe, Mn Pb, Cu

OTHER METALS:

DISSOLVED METALS FIELD FILTERED? YES NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

8270C for DEHP only
PCB: 1668A: Chlorinated biphenyl
conspires by HRGC/HRMS Method
1668A (Subcontract to Columbia
Analytical Services, Houston, TX)

SITE HISTORY: Capacitor Factory

SUSPECTED CONTAMINATION: PCBs, DHP

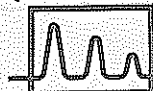
FIELD READINGS: _____

SAMPLER(S): Whitten Dam 802-223-4502

REINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____



eastern analytical, inc.

professional laboratory services

25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMER_SERVICE@EAILABS.COM | WWW.EAILABS.COM

(WHITE: ORIGINAL

GREEN: PROJECT MANAGER)

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE/TIME *If COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC				SVOC				TCLP	METALS		INORGANICS				MICRO		OTHER		# of CONTAINERS	NOTES MeOH VIAL #
				5242 5242 BTEX 8260B 674 1,4 DIOXANE EDB DBCP 8021B BTEX HALOS 8015B GRO HECRO HAPPH 8270C 625 ABN A BN PAH TPH100 LI L2				8015B DRD HAPPH PEST 609 PCB 609 PEST 8001A PCB 6007 OIL & GREASE 1664 TPH 1664				TCLP 1311 ABN METALS VOC PEST HEAS	DISSOLVED METALS (LIST BELOW) TOTAL METALS (LIST BELOW)		TS TSS TDS SPEC CON. Br Cl F SO ₄ NO ₃ NO ₂ NO ₂ /NO ₃ BOD CBOD T. ALK TKN NH ₃ T. PHOS pH Y. RES. CHLORINE COD PERKINS TOC TOTAL CHLORIDE TOTAL SULFIDE REACTIVE CHLORINE REACTIVE SULFIDE FLASHPOINT IGNITABILITY	I. COLIFORM E. COLI ENTEROCOCCI HETEROTROPHIC PLATE COUNT								
WQ-3-10 EPA-8	8-31-10 13:45	GW	G	X				X															2	
PZ-05	9:50	GW	G	X				X															2	
PZ-06	11:30	GW	G	X				X															2	
EPA-7	15:05	GW	G	X				X															2	
EPA-6	16:15	GW	G	X				X															2	
EPA-4	17:30	GW	G	X				X															2	
EPA-3	18:40	GW	G	X				X															2	
MW-9	9-1-10 7:10	GW	G	X				X															2	
MW-9D	8:50	GW	G	X				X															2	
MW-8	10:20	GW	G	X				X															2	
MATRIX: A-Air; S-Soil; GW-Ground Water; SW-Surface Water; DW-Drinking Water; WW-Waste Water				(3-cooler)																				
PRESERVATIVE: H-HCL; N-HNO ₃ ; S-H ₂ SO ₄ ; Na-NaOH; M-MEON																								

PROJECT MANAGER: Daniel Baston
COMPANY: The Johnson Co
ADDRESS: 100 State St. Suite 600
CITY: Montpelier, VT STATE: VT ZIP: 05602
PHONE: 802-229-4600 EXT.:
FAX: 802-229-5876
E-MAIL: DPB@Jcomail.com
SITE NAME: JARD
PROJECT #: 3-2218-3
STATE: NH MA ME VT OTHER:
REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER:
QUOTE #: PO #:

DATE NEEDED: Standard TAT

QA/QC

REPORTING LEVEL
A B C
OR
MA MCP
PRESUMPTIVE CERTAINTY

REPORTING OPTIONS

PRELIMS: YES OR NO
IF YES: FAX OR PDF

ELECTRONIC OPTIONS
☐ NO FAX ☒ E-MAIL ☐ PDF

TEMP. _____ °
ICE? YES NO

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS:

DISSOLVED METALS FIELD FILTERED? YES NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

36206 - DEPT. of Energy, W-2-21-10
PaB's - 1668A - chlorinated biphenyl
enzyme B by HRGC/HRMS
method 1668A (Subcontract to
Columbia Analytical Services
Houston - Texas)

SITE HISTORY: Casaciton Facility

SUSPECTED CONTAMINATION: Feeds / Dams

FIELD READINGS:

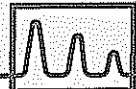
SAMPLER(S): Warren-Denny 801-223-4502

9-1-10 10:37

RELINQUISHED BY: DATE: TIME: RECEIVED BY:

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____



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(WHITE: ORIGINAL

GREEN: PROJECT MANAGER)

Page 1 of 1

JARD-3

CHAIN-OF-CUSTODY RECORD

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW) GRAB/*COMPOSITE	VOC		SVOC		TCMP METALS		INORGANICS		MICRO		OTHER		NOTES MeOH Vial #
			5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	5242 5242 BTEX 5242 MTBE 5242 ETB 5242 DBP 5242 DBP	
MW-1	9-1-10	12:00	GW												
EPA-10		14:40	GW												
DP-1		14:40	GW												
MW-2		16:45	GW												
MW-3		17:45	GW												
MW-4		19:15	GW												
MW-5		20:27	GW												
MW-6	9-2-10	7:40	GW												
MW-7		9:20	GW												
DP-2		8:25	GW												
MW-8		10:27	GW												
EG-1		10:40	GW												

MATRIX: A-Air; S-Soil; GW-Ground Water; SW-Surface Water; DW-Drinking Water; WW-Waste Water
PRESERVATIVE: H-HCL; N-HNO₃; S-H₂SO₄; Na-NaOH; M-MEOL

(PCB 1668A - MW-3 only) small volume in 2-1L amber glass vial per ETL

PROJECT MANAGER: Daniel Barton
 COMPANY: The Johnson Co
 ADDRESS: 100 State St., Suite 600
 CITY: Montpelier STATE: VT ZIP: 05602
 PHONE: 802-229-4600 EXT:
 FAX: 802-229-5876
 E-MAIL: DPB@JCOMAIL.COM
 SITE NAME: JARD
 PROJECT #: 3-2218-3
 STATE: NH MA ME VT OTHER:
 REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER:
 QUOTE #: PO #:

DATE NEEDED: Standard

QA/QC

REPORTING LEVEL

A B C

OR

MA MCP

PRESUMPTIVE CERTAINTY

REPORTING OPTIONS

PRELIMS: YES OR NO

IF YES: FAX OR PDF

ELECTRONIC OPTIONS

NO FAX E-MAIL PDF

TEMP. °C
ICE? YES NO

EQUIS

SAMPLER(S): Waggon Daren 802-223-4507

RELINQUISHED BY:

DATE:

TIME:

RECEIVED BY:

RELINQUISHED BY:

DATE:

TIME:

RECEIVED BY:

RELINQUISHED BY:

DATE:

TIME:

RECEIVED BY:

METALS: 8 RCRA 13 PP Fe, Mn Pb, Cu

OTHER METALS:

DISSOLVED METALS FIELD FILTERED? YES NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

8270C - DEHP only (all)
 PCBs - 1668A - chlorinated biphenyls
 congeners by HAGE/HAMS
 method 1668A (subcontracted to
 Columbia Analytical Services,
 Houston, TX) (MW-3 only)

SITE HISTORY: capacitor facilitySUSPECTED CONTAMINATION: PCBs DEHPFIELD READINGS: MW-3, 3D, 6, 6D, DP-1, DP-2

*potential for high PCBs



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E-MAIL CUSTOMER SERVICE@EAILABS.COM WWW.EAILABS.COM

(WHITE: ORIGINAL

GREEN: PROJECT MANAGER)

* (3 coolers)

The Johnson Company, Inc.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

YSI CALIBRATION SHEET

Field site 3-2218-3

Equipment ID: YSI #4		Serial # 0762008 AC												
Brand of Standard		Oakton	Oakton	Oakton	Cole Parmer	YSI	Oakton	Oakton	YSI	YSI	YSI	Oakton		
Lot #		2904037	2905196	2906673	-	-	-	2009616	094100325	-	-	2002578		
Expiration Date		4-11	4-11	12-10	-	-	-	1-11	8-11	-	-	2-11		
Date	Time	Initials	pH 4.01	pH 7.00	pH 10.00	Certified thermometer Temp. (°C)	YSI Temp. (°C)	Specific Cond. mS/cm @ 25°C	Specific Cond. 1.413 mS/cm @ 25°C	ORP-Zobell Solution (200-275mV)	Barometric Pressure (mmHg)	100% D.O. (mg/L) (%)	Zero O ₂ Solution (mg/L)	
8-30-10	5:10	WPN	4.01	7.00	10.00	22.0	22.0	-	1.413	235	749.6	7.98	98.1	0.12
8-30-10	21:10	WPN	4.03	6.99	9.97	25.0	24.89	-	1.410	230	750.2	8.66	101.1	0.22
8-31-10	5:25	WPN	4.01	7.00	10.00	20.0	20.02	-	1.413	237	750.5	9.13	98.8	0.14
8-31-10	19:40	WPN	3.98	6.98	9.96	25.0	25.07	-	1.409	229	745.1	8.64	105.8	0.19
9-1-10	5:25	WPN	4.01	7.00	9.99	20.0	20.03	-	1.413	237	746.3	9.11	98.2	0.12
9-1-10	21:10	WPN	3.99	6.99	9.97	25.0	25.11	-	1.407	230	745.3	7.35	82.2	0.19
9-2-10	5:05	WPN	4.01	7.00	9.99	20.0	20.01	-	1.413	237	739.6	9.42	97.3	0.17
9-2-10	13:30	WPN	3.98	6.98	9.96	25.0	25.07	-	1.407	231	739.3	8.70	98.3	0.22

HRS Reference #65

Page 242 of 244

The Johnson Company, Inc.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600

Fax: (802) 229-5876

www.johnsonco.com

TURBIDITY METER CALIBRATION SHEET

Jard site 37-3-2218-3

Equipment ID: LaMotte 2020 Turbidimeter			Serial #:		
Brand of Standard		Amco	Amco	Comments	
Lot #		P998619	P997329		
Expiration Date:		4-11	4-11		
Date	Time	Initials	1.0 NTU Value		
8-30-10	5:00	wm	1.0	10.0	—
8-30-10	21:00	wpn	0.95	9.93	—
8-31-10	5:10	wpn	1.0	10.0	—
8-31-10	19:55	wm	0.94	9.96	—
9-1-10	5:00	wm	1.0	10.0	—
9-1-10	21:05	wm	0.95	9.94	—
9-2-10	5:00	wpn	1.0	10.0	—
9-2-10	13:20	wpn	0.95	9.92	—

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

[illegible]

PROJECT MANAGER: Dan Baston
COMPANY: The Johnson Company
ADDRESS: 100 State St. Suite 600
CITY: Montpelier STATE: VT ZIP: 05602
PHONE: (802) 229-5600 EXT.:
FAX: (802) 229-5876
E-MAIL: DPBO@COMAIL.COM
SITE NAME: JARD
PROJECT #: 3-2218-3
STATE: NH MA ME VT OTHER:
REGULATORY PROGRAM: NPDES: RGP POTW STORMWATER OR
GWP, OIL FUND, BROWNFIELD OR OTHER:
QUOTE #: PO #:

DATE NEEDED: standard TAT

QA/QC
REPORTING LEVEL
A B C
OR
MA MCP
PRESUMPTIVE CERTAINTY

REPORTING OPTIONS
PRELIMS: YES OR NO
IF YES: FAX OR PDF
ELECTRONIC OPTION:
NO FAX E-MAIL PDF

TEMP. _____ °F

ICE? YES NO

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS: _____

DISSOLVED METALS FIELD FILTERED?	YES	NO
----------------------------------	-----	----

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

SAMPLER(S): Patricia Gagnola George Dersch			
RELINQUISHED BY:	DATE: 9/21/10	TIME: 8:57	RECEIVED BY:
RELINQUISHED BY:	DATE: 9/21/10	TIME: 11:21	RECEIVED BY:
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:

SITE HISTORY: capacitor manufacturing
SUSPECTED CONTAMINATION: PCBs
FIELD READINGS: _____



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(WHITE: ORIGINAL

GREEN: PROJECT MANAGER)